

PRAKASH

# SURYA

STEEL TUBES & PIPES

Built  
to Last  
forever

Delivering Trust.....across the Globe !



Delivering Trust.....across the Globe !



**ERW &  
SPIRAL WELDED  
PIPES**



# From MD's Desk



B.Raju

The Indian Steel Pipe and Steel industry has recently experienced rapid growth backed by the Government's initiative of "Make in India" conceptualized by the Hon'ble Prime Minister with thrust on infrastructure spending and boosting the Oil & Gas Line Pipe industry. The Government of India targeting 300 Million Metric Tons Steel manufacturing capacity by the year 2030, which will lead to make India a prominent country for sourcing of Pipes & Tubes.

Surya Roshni is a US \$800 million company wherein US\$ 550 million is from Steel Tube Pipes & Strips having 4 state-of-the-art manufacturing plants across PAN India, including the recently added facility of 1,50,000 MTPA at Hindupur (Andhra Pradesh - South India) for supplying ERW Steel GI, Black Pipes & Structural Hollow Sections.

The export requirements are mainly fulfilled from our Bhuj (Gujarat) plant which is situated at Mundra, a major seaport of India and this plant has recently merged with the company. The strategic location of the plant has added advantage of imports & exports. We manufacture pipes of different international specifications such as API, EN, BS, AUSTRALIA and ASTM GRADE.

In this line our company is climbing the ladder of success very fast and recently Bhuj plant has bagged orders worth US\$ 57 million from Indian Oil Corporation Limited for supply of API grade line pipes, apart from this we have also bagged several other orders in this segment from the other top oil & gas sector companies of India.

We are also establishing Coating Facility, which shall further enlarge our existing product basket and enable to supply different types of coated pipes like 3LPE, 3LPP, FBE (single & dual layer) and internal epoxy coating which is anti-corrosive and also increases the life of the pipe.

The wide acceptance of our steel pipe products is evident from our expanding market share and brand preference. Our world-class quality products are being sold by 25,000 dealers across India and are also being exported to more than 50 countries across the globe namely Europe, Canada, USA, Australia and Middle East etc.



# BHUJ PLANT



## About us

From a beginning in 1973, the Surya Group has emerged today as a vast conglomerate with the largest pipe manufacturing plants with installed capacity of 12,15,000 MT per annum. It also has a large cold rolling strip mill at Bahadurgarh (Haryana), two lighting units one each at Kashipur (Uttarakhand) and Gwalior (MP).

In order to meet the growing demand of Large Diameter Pipes (SAWH), the group set up a new facility. This facility also has a state of the art external & internal anti corrosion coating system offering 3LPE, 3LPP, DFBE, FBE internal epoxy etc. type of coatings. In west coast of India at Anjar in the state of Gujarat, near International sea port, Mundra & Kandla.

There are regular expansions of capacity to meet the growing demand in both Steel & Lighting segments. The plant has certifications from API and ISO 9001:2015. It has been supplying material to all leading names in the oil and gas sector besides being a reliable supplier in the export market, that covers developed and developing countries.

ONE OF THE **LARGEST**  
PIPE  
**MANUFACTURING**  
SETUP PLANT WITH  
**CAPACITY** ABOUT  
**12,15,000 MT**  
(1.215 MILLION)  
PER ANNUM.

**FIRM**  
**COMMITMENT**  
TO **EXCELLENCE** IN  
**QUALITY,**  
A BRAND LEADER  
IN BOTH  
**STEEL PIPE** AND  
**LIGHTING INDUSTRY.**

THE COMPANY HAS A  
**WIDE MARKET**  
REACH WITH  
ITS BRANCHES,  
**DISTRIBUTOR** AND  
**DEALER**  
NETWORK SPREAD  
**ALL** OVER THE  
**COUNTRY.**

A **TURNOVER**  
OVER  
**INR. 5000 CRORES**  
(US \$ 800 MILLIONS),  
THE GROUP'S QUEST  
FOR **GROWTH**  
IS NEVER ENDING.

ONE OF  
THE **BIGGEST**  
**INDIAN**  
CORPORATE  
EXPORTING TO OVER  
**50 COUNTRIES**

**SURYA GROUP** IS  
TAKING BIG STRIDES IN  
ITS CHOSEN AREAS  
WITH TESTED **SKILLS,**  
**COMMITMENT,**  
**WORKFORCE,**  
**VAST EXPERIENCE**  
AND MATURE  
**LEADERSHIP.**

# Our Manufacturing Plants







USA



UNITED KINGDOM



AUSTRALIA



EUROPE



CANADA



U.A.E.



MALAYSIA



MAURITIUS



OMAN



KUWAIT



SAUDI ARABIA



SINGAPORE



QATAR



GHANA



JORDAN



BAHRAIN



TANZANIA



SEYCHELLES



UGANDA



SRI LANKA



ETHIOPIA



CYPRUS



MYANMAR



EGYPT



# ERW PIPES

## SPECIFICATIONS & APPLICATIONS

The products conform to the following National & International specifications

### Water Pipe Lines

Water Mains, Plumbing, Sewerage Systems.  
Industrial Water Lines, Plant Piping.  
IS:1239, IS:3589, ASTM A 53, JIS G 3444,  
EN 10255, EN 10217-1, AS : 1074,  
ASNZ: 1163:2016

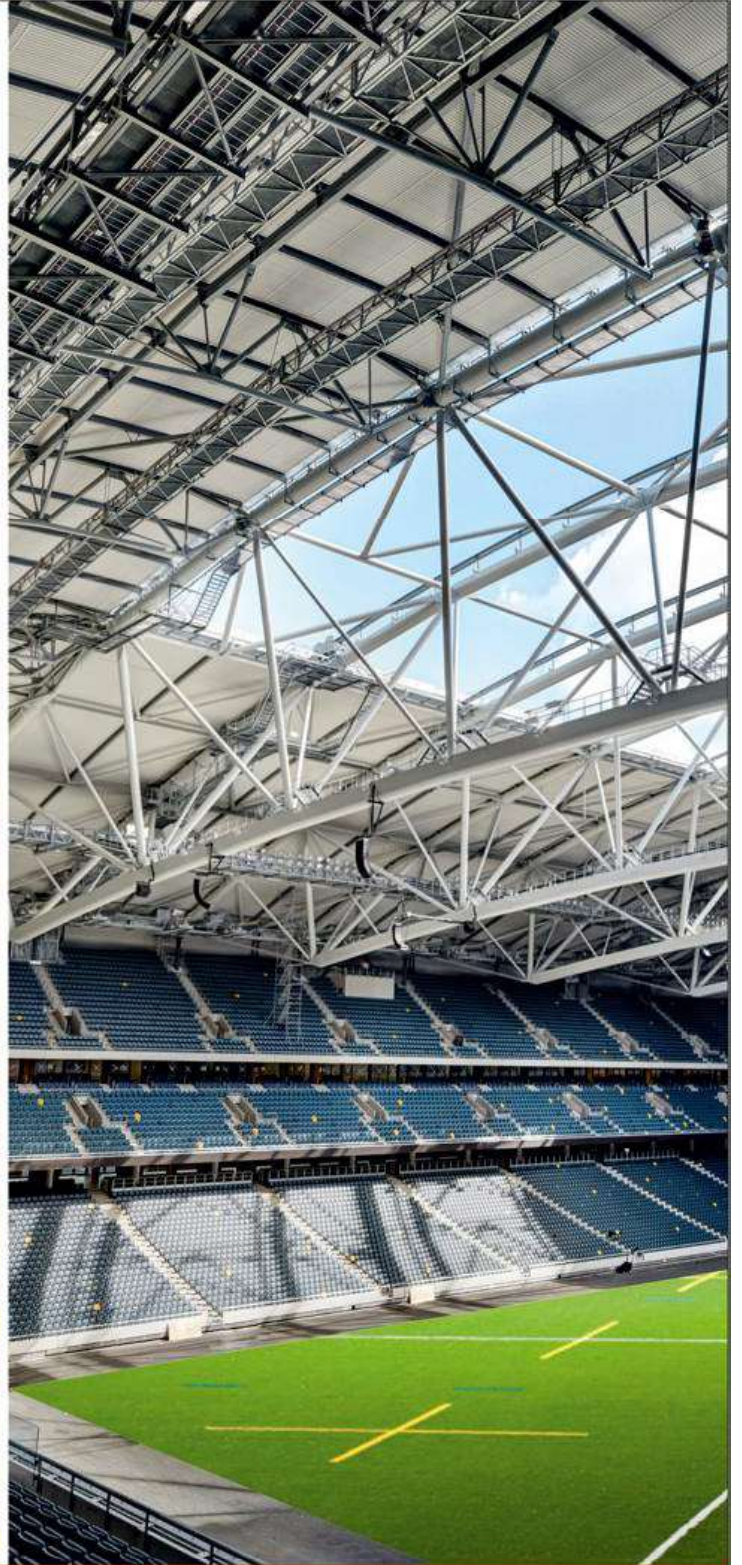
### Oil Pipe Lines

Oil Refinery Piping, Crude Oil Piping,  
Cross Country Pipe Line.  
API 5L (PSL 1 & PSL 2), IS/ISO 3183

### Gas Pipe Lines

Pipe Lines for Natural Gas, LPG  
and other Non-Toxic Gases.  
API 5L (PSL 1 & PSL 2), IS/ISO 3183  
JIS G 3444





### Construction Industries

Scaffolding & Structural Purposes.  
 IS:1161, IS:4923, EN 39  
 EN 10219- Part 1 & 2, AS NZ 1163 : 2016  
 ASTM A 500  
 Electrical Poles & Telecom Tower (IS:1161)

### Fire Fighting System

ASTM A 53, ASTM A 795  
 HVAC (Heating Ventilation Air-Conditioning)  
 IS:3589, IS:1239

### Power Projects

Ash Handling System. LP Piping. API 5L  
 IS:3589, IS:1239

### Sugar Industries

Steel Tubes for Mechanical & General  
 Engineering Purposes.  
 (IS:3601, BS:1775)

### Agriculture & Irrigation

Deep Tube-Wells & Casing Pipes. IS:4270

### Other Purposes

Supply of Exhaust Piping. Cold Storage Industry  
 LPG Cylinder Supporting Rings. (IS:1239)  
 Steel Tubes for Idlers & Belt Conveyers (IS:9295)  
 Electrical Poles & Telecom Tower (IS:1161)





## ERW PIPE PLANT

ERW pipes are extensively used in agriculture, industry and construction activities like scaffolding and casing in bore wells. These are used for conveying water, gas, crude oil and chemicals at various pressures and densities over long distances. Considering the challenging and varied applications, the pipes are produced to meet very high standards of both national and international specifications.

Quality assurance begins at the raw material stage and continues right through all the manufacturing operations, till the pipes are packed for dispatch. The quality assurance department is fully backed by a modern laboratory for various metallurgical and chemical tests, and a test house for testing physical properties. It has been awarded the prestigious ISO 9001:2015 certificate by DNV GL Business Assurance for its quality systems.

Surya Group has installed extended capacity of 9,00,000 MT per annum to manufacture ERW pipes from OD 1/2" to 16" according to various National & International specifications including API5L upto Grade X80 PSL2. The Group has entered in manufacturing of Oil Country Tubular Goods (OCTG) as per API 5CT Gr H40, J55, K55 PSL 1 & have supplied successfully to USA market. We are also supplying pipes conforming to AS 1074/ AS NZ 1163 and EN 10219. Besides above, our plant is supplying BLACK, RED PAINTED, GREY PRIMER PAINTED, GALVANIZED & ROLL-GROOVED PIPES.



# COLD ROLLED STRIPS & SHEETS



## Cold Rolled Steel Plant

Cold Rolled Steel Strips/Sheets serve as critical inputs for a range of applications in a wide spectrum of industries. Considering the sophisticated applications, the CR Steel Strips are required to meet high standards of inherent quality, surface finish, heat treatment and close tolerance on dimension.

CR Strip division at Bahadurgarh is meeting these stringent requirements for sophisticated application with a production capacity of about 1,15,000 MT per annum.

Surya Roshni has made its presence felt in the market serving important customer particularly in the northern and western regions. Each supply is customised to specific customer requirement in terms of quality, delivery, technical delivery conditions, etc. Attempt is made to develop long term relationship based on trust and transparency with its stress on quality, timely supplies and responsive customer service, it has built enduring relationship with its clients. It is now fully geared to meet the demanding needs of high value-added segment of Cold Rolled steel market throughout the country.



# TESTING & QUALITY CONTROL

The trained and committed work force ensures high quality of pipes made to various national and international standards, including the demanding API specifications.



## Our Credentials To Quality Supremacy

Surya's relentless pursuit and quest for success is unmatched. Many such International accreditations and certifications have been awarded to Surya from governing bodies for meeting the best of quality standards. The special grades that have graced SURYA and made it one of the biggest Indian companies includes API 5L grade A, API 5L grade B as well as API 5L grade X42 to X80. The state-of-the-art plants have certifications from API and ISO 9001:2015 by DNV GL.

### Product Profile : ERW Pipes

NPS	Thickness	Capacity (MT per annum)	Length	Specifications	Pipe Ends
1/2" to 16"	1.6 mm to 12.7 mm	9,00,000 (0.9 Million)	300 mm to 12900 mm	All National / International specifications including API5L upto X-80 PSL2, API 5CT H40, J55, K55 PSL1, EN : 10255/10219, EN : 10217-1, AS : 1074, AS NZ 1163: 2016, ASTM A 53, BS EN - 39, ASTM A 500, ASTM A 252, ASTM A 795	Plain / Bevelled/ Roll-Grooved



# Testimony To Our Capability

DNV·GL

## MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 70121-2010-AQ-IND-RvA      Initial certification date: 22, January, 2010      Valid: 22, January, 2016 + 15, September, 2018


This is to certify that the management system of

**Surya Global Steel Tubes Ltd.**  
 Survey No. 188, Anjar - Mundra Highway, Village: Bhuvad, Taluk: Anjar - 370 130, District: Kutch, Gujarat, India

has been found to conform to the Quality Management System standard:  
**ISO 9001:2008**


This certificate is valid for the following scope:  
**Manufacture and supply of HSAW (helical submerged arc welded) pipes, ERW (black & GI) pipes & tubes for oil and gas, water & structural purpose**

Place and date:  
 Chennai, 07, January, 2016



The IFA is a signatory to the IAF MLA

For the issuing office:  
 DNV GL - Business Assurance  
 ROMA, No. 10, GST Road, Alandur, Chennai - 600 016, India



Sivadasan Madiyath  
 Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.  
 ACCREDITED UNIT: DNV GL Business Assurance B.V., ZWIJGENEG 1, 2799 VA, WAREHOUSSE, NETHERLANDS. TEL: +31103922688  
 www.dnvgl.com

ISO 9001:2015  
 70121-2010-AQ-IND-RvA

DNV·GL

## MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 177047-2015-AE-IND-RvA      Initial certification date: 03, May, 2012      Valid: 03, May, 2015 - 02, May, 2018


This is to certify that the management system of

**Surya Global Steel Tubes Limited**  
 Survey No. 188, Anjar Mundra Highway, Village: Bhuvad - 370 130, District: Kutch, Gujarat, India

has been found to conform to the Environmental Management System standard:  
**ISO 14001:2004**


This certificate is valid for the following scope:  
**Manufacture and supply of helical submerged arc welded & electric resistance welded (black and galvanized) pipes & tubes for oil, gas, water and structural purposes**

Place and date:  
 Chennai, 21, April, 2015



The IFA is a signatory to the IAF MLA

For the issuing office:  
 DNV GL - Business Assurance  
 ROMA, No. 10, GST Road, Alandur, Chennai, PIN - 600 016, India



Sivadasan Madiyath  
 Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.  
 ACCREDITED UNIT: DNV GL Business Assurance B.V., ZWIJGENEG 1, 2799 VA, WAREHOUSSE, NETHERLANDS. TEL: +31103922688 www.dnvgl.com

ISO 14001:2004  
 177047-2015-AE-IND-RvA

DNV·GL

## MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 177048-2015-HSO-IND-DNV      Initial certification date: 03, May, 2012      Valid: 03, May, 2015 - 02, May, 2018

This is to certify that the management system of

**Surya Global Steel Tubes Limited**  
 Survey No. 188, Anjar Mundra Highway, Village: Bhuvad - 370 130, District: Kutch, Gujarat, India

has been found to conform to the Occupational Health and Safety Management System standard:  
**OHSAS 18001:2007**

This certificate is valid for the following scope:  
**Manufacture and supply of helical submerged arc welded & electric resistance welded (black and galvanized) pipes & tubes for oil, gas, water and structural purposes**

Place and date:  
 Chennai, 21, April, 2015



For the issuing office:  
 DNV GL - Business Assurance  
 ROMA, No. 10, GST Road, Alandur, Chennai, PIN - 600 016, India



Sivadasan Madiyath  
 Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.  
 ACCREDITED UNIT: DNV GL Business Assurance India Private Limited, ROMA, No. 10, GST Road, Alandur, Chennai, PIN - 600 016, India

OHSAS 18001:2007  
 177048-2015-HSO-IND-DNV

## Certificate of Compliance

Certificate Number: 20100301-EX15061      Page 1 of 2

Issue Reference: EX15061, 20th September 21  
 Issue Date: 29th March 07



Underwriters Laboratories Inc.

Issued to: **SURYA ROSHNI LTD**  
 PRAKASH NAGAR, BAHADURGARH  
 JHAJAJAR, HR 124507 INDIA

This is to certify that representative samples of

**Metallic Sprinkler Pipe**  
 Refer to Addendum page

Have been investigated by Underwriters Laboratories Inc.® in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: **The basic standard used to investigate products in this category is UL 852, "Metallic Sprinkler Pipe for Fire Protection Service."**

Additional Information: **See UL On-Line Certification Directory at [www.ul.com](http://www.ul.com) for additional information.**

Only those products bearing the UL Recognized Component Mark should be considered as being covered by UL's Recognition and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and listing number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark **®** may be used in conjunction with the required Recognized Mark. The Recognized Component Mark is required when specified in the UL Directory pertaining the recognition or under "Marking" for the individual recognition.

Look for the UL Recognized Component Mark on the product

Issued by: **Volpe Ethus**  
 Volpe Ethus, Customer Service Professional  
 UL, India Pvt. Ltd.

Reviewed by: **William R Carney**  
 William R Carney, Director of the North American Certification Program  
 UL, Inc. Division OHSW

Any statements and descriptions provided herein concerning UL, which are not so qualified are behalf of Underwriters Laboratories Inc.  
 The position of India, formerly only by Underwriters UL, India Pvt. Ltd.

UL CERTIFICATE  
 No. : 20100301-EX15061



# Testimony To Our Capability

**DNV-GL**

## CERTIFICATE OF FACTORY PRODUCTION CONTROL

Certificate No: 10139-2017-CE-IND-Rev.0      Initial certification date: 29, December, 2010      Valid until: 29, December 2019

This is to certify that

That the product(s)

Non-alloy steel tubes suitable for welding and threading

Manufactured by

**Surya Global Steel Tubes Limited**

Surya No 188, Anjar-Mundra Highway, Vill: Bhuvad, Dist: Anjar, Dist: Kutch, PIN-370130, India

has on a voluntary basis been assessed with respect to the conformity assessment procedure "Factory Production Control" as described in EN 10255:2004+A1:2007 annex ZA Clause 12.3 of the standard on structural steel, as amended and found to comply.

**Applications/Limitations**

In compliance with the Construction Product Regulation 305/2011, CE marking & provide Declaration of Performance and Attestation procedure AcC 3, which is described in the Standard EN 10255:2004+A1:2007 according the Annex ZA; Initial Type Testing (ITT) Clause 12.2 shall meet the requirements and compliance of the same rests under responsibility of the Manufacturer.

This certificate remains valid during a three year period as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the factory production control itself are not modified significantly. The product liability rests with the manufacturer or its representative.

Place and date: Chennai, 2017-06-17

For the Issuing office:  
DNV GL - Business Assurance  
DNVGL No. 10, GST Road,  
Alondar, Chennai - 600 016,  
India

Jeyn, Harikrishna Sundaresan  
Manager - Product Certification

The Certificate is subject to terms and conditions overall. Any significant change in design or construction may render this Certificate invalid. Copies for any business issued by DNV GL is given negligible or without restriction. DNV GL's maximum competence fabricating arising out of or related to the use of or reliance on this document shall be limited under no circumstances exceed the amount of the fee. Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.

DNV GL BUSINESS ASSURANCE INDIA PVT LTD, "SURYA" 10 GST Road, Chennai - 600 016, India, TEL: (91) +91 44 42989933

CE CERTIFICATE  
EN 10255:2004+A1:2007  
10139-2017-CE-IND-Rev.0

**DNV-GL**

## CERTIFICATE OF CONFORMITY OF THE FACTORY PRODUCTION CONTROL

Certificate No.: 1162-CPR-0513-Rev. 1.0      Initial certification date: 2014-02-21      Validity end date: 2020-02-21

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product(s)

**Cold formed welded structural hollow sections of non-alloy steels**

Type: **Cold formed circular hollow sections (CFCHS)**  
Steel grade & Quality: S235SR1  
Thickness: 2 - 10 mm      Min. Ø: 21.3 mm      Max. Ø: 273.0 mm

Type: **Cold formed rectangular hollow sections (CFRHS)**  
Steel grade & Quality: S235SR1, S235SR2H  
Thickness: 2 - 10 mm      Size: 40 x 20 mm to 400 x 200 mm

Type: **Cold formed square hollow sections (CFSHS)**  
Steel grade & Quality: S235SR1, S235SR2H  
Thickness: 2 - 10 mm      Size: 20 x 20 mm to 300 x 300 mm

to be used in metal structures or in composite metal and concrete structures.

placed on the market under the name or trade mark of  
**Surya Global Steel Tubes Ltd**  
Surya No: 188, Anjar-Mundra Highway, Vill: Bhuvad, Dist: Kutch, 370130, Gujarat, India  
and produced in the manufacturing plant(s)  
**Surya Global Steel Tubes Ltd**  
Surya No: 188, Anjar-Mundra Highway, Vill: Bhuvad, Dist: Kutch, 370130, Gujarat, India

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

**EN 10219-1:2006**  
under system 2+ are applied and that

**THE FACTORY PRODUCTION CONTROL IS ASSESSED TO BE IN CONFORMITY WITH THE APPLICABLE REQUIREMENTS.**

This certificate will remain valid as long as neither the harmonised standard, the construction product, the ACP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

For more details see Appendix accompanying this Certificate.

Place and date: Sakai, 2017-03-31

For the Notified Body 1162:  
DNV GL Business Assurance Sweden  
AB

Bengt-Olov Anlin  
Management Representative

SWEDAC  
ACCREDITED  
SACREDITING  
ISO/IEC 17065

Last fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.  
ACCREDITED UNIT: DNV GL Business Assurance Sweden AB, Box 2046, 771 09 Sakai, Sweden, TEL: +46 8 627 963 00, www.dnvgl.com

CE CERTIFICATE  
EN 10219-1:2006  
1162-CPR-0513-Rev. 1.0



### Certificate of Compliance

This certificate is issued for the following:

**Steel Pipe for Automatic Fire Sprinkler Systems**  
(see attached listing)

Prepared for: **Surya Global Steel Tubes Ltd**  
Surya No. 188, Anjar-Mundra Highway, Village - Bhuvad, Dist - Kutch, P.C. - 370130, India

Manufactured by: **Surya Rodini Ltd**  
Surya No. 188, Anjar-Mundra Highway, Village - Bhuvad, Taluka-Anjar, Dist - Kutch, Gujarat P.C. 370110, India

FM Approvals Class: 1630

Approval Identification: 0003047635      Date Approved: May 15, 2013  
Suspended by: RR212866      Date Approved: February 15, 2018

To verify the availability of the Approved product, please refer to [www.fmallapprovals.com](http://www.fmallapprovals.com)

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the construction as shown in the Approval Guide, an online resource of FM Approvals.

David B. Fuller  
VP, Manager of Fire Protection  
FM Approvals  
1111 Boston-Previdence Turnpike  
Norwood, MA 02062 USA

Page 1 of 2



FM CERTIFICATE  
No. : 0003047635

### SRI LANKA STANDARDS INSTITUTION

Permit for the Use of SLS Certification Mark

1. By virtue of the powers derived under the provisions of section 19 of the Sri Lanka Standards Institution Act, No.8 of 1984, the Institution hereby grants to **SURYA ROBINI LTD.**

(Name of the Permit Holder)

of **PADMA TOWER 1.5 - RAJINDEERA PLACE, NEW TELLU - 110508, INDIA.**

(Address)

called "the permit holder" this permit to use the Certification Mark set out in the first column of the Schedule hereto upon it in respect of the article(s) permit set out in the second column of the said Schedule and manufactured process(es) operated at the premises located at **30, WELLY, NO. 188, ANJAR-MUNDRA HIGHWAY, VILLAGGE, BHUVAD, DISTRICT KUTCH, GUJARAT, INDIA.**

(Address)

and which are in conformity with the relevant Sri Lanka Standard(s) referred to in the third column of the said schedule as amended or revised from time to time.

2. This permit carries the rights and obligations stipulated in the rules and regulations made under the above mentioned Act.

3. This permit is subject to the General Conditions and Specific Conditions listed as annexes to this permit.

4. The Institution reserves the right to change or add to any of the said conditions as and when required, with prior notice.

5. This permit is valid for the period upto the stipulated date of expiry, subject to the validity of the relevant Standards including the amendments and revisions if any, or until it is cancelled by the Director General or the Officer authorized on that behalf by the Director General or surrendered by the permit holder.

Permit No.: 1958      Date of Issue: 2018-02-21      Date of Expiry: 2018-10-22


**THE SCHEDULE**


(I) Certification Mark	(II) Article (s)/Process	(III) Sri Lanka Standard(s)
	"PRAGAASHI-SURYA" BRAND GALVANIZED STEEL PIPES (PLEASE SEE SPECIFIC PERMIT CONDITIONS FOR THE SCOPE)	SLS 829-2009 SPECIFICATION FOR GALVANIZED STEEL PIPES & SOCKETS

Director General/Authorized Officer  
SRI LANKA STANDARDS INSTITUTION

SLS CERTIFICATE  
SLS 829:2009







**ACTIVFIRE**  
ACTIVE FIRE PROTECTION - PRODUCT CERTIFICATION

CSIRO Verification Services  
Clayton, Victoria, Australia  
+61 (0)3 9541 2777  
http://www.activfire.gov.au/

## Certificate of Conformity

Certificate num.	Registration date	Version	Issue date	Valid until	Page 1 of 3
<b>afp - 2977</b>	12-Jun-2015	Number 5	20-Feb-2018	30-Apr-2018	

**Product designation**  
Surya, AS 1074 Series, steel fire protection pipe  
(Refer to the Schedule/enclosures for further specified details)


**Agent/distributor**  
Marubeni-Itochu Steel Oceania Pty Ltd  
Level 25, 570 Bourke Street, MELBOURNE, VIC, AUSTRALIA, 8001


**Registrant**  
Surya Roshni Limited  
Prakesh Nagar, Sankhol, BAHADURGARH, HARYANA, INDIA, 124507

**Manufacturer**  
Surya Roshni Limited  
Prakesh Nagar, Sankhol, BAHADURGARH, HARYANA, INDIA, 124507  
Manufacturing unit (Primary)  
Surya Roshni Limited  
Survey No. 188, Anjar Munda Highway, Bhowad, Anjar, KUTCH, GUJARAT, INDIA, 370130

**Conformance criteria and evaluation**  
The Surya, AS 1074 Series, steel fire protection pipe has been evaluated and verified as conforming with the relevant requirements of the following criteria.  
1. Australian Standard AS 1074-1989, 'Steel tubes and tubulars for ordinary service'.


**Limitations/conditions of conformance**  
Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having jurisdiction.  
Specified limitations/conditions, determined from the evaluation for conformity, include the following:  
i. System design and installation shall be determined and verified in accordance with the performance and prescribed requirements of the regulations, standards and criteria as specified by the building code and authorities having jurisdiction.  
ii. System design and installation requirements may specify a minimum wall thickness that precludes the use of some of the scheduled pipe sizes for certain applications and locations.  
iii. The dimensional and mechanical compatibility of pipes must be verified with the sizes of components by which they are connected or to which they connect.


Issued by  
  
David Whittaker  
Executive Officer - ActivFire Scheme



© CSIRO Australia, 2018

This certificate remains the property of CSIRO and may be subject to amendment, suspension or withdrawal at any time. The validity and authenticity of this certificate can be verified by the verification register located at <http://www.activfire.gov.au>





**ACTIVFIRE**  
ACTIVE FIRE PROTECTION - PRODUCT CERTIFICATION

CSIRO Verification Services  
Clayton, Victoria, Australia  
+61 (0)3 9541 2777  
http://www.activfire.gov.au/

## Certificate of Conformity

Certificate num.	Registration date	Version	Issue date	Valid until	Page 2 of 3
<b>afp - 2977</b>	12-Jun-2015	Number 5	20-Feb-2018	30-Apr-2018	

**Producer's description**  
The production and physical characteristics of Surya, AS 1074 Series, steel fire protection pipe are summarised as follows:  
• The pipe is produced as ERW tube from Hot Rolled steel strip.  
• The individual lengths of pipe are HDG (inner surface as well as outer surface).  
• Steel is processed in accordance with AS1074.  
• The HDG coating conforms to AS/NZS 4792 – coating class HDG300 (300 g/m<sup>2</sup> min coating mass).

**Technical specification**  
The following details are a representative extract of the technical specification for the Surya, AS 1074 Series, steel fire protection pipe and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.


**Schedule of variant designations**  
The following is a schedule of validated variant designations of the certified/listed equipment.


DN	Inch	Class	OD min	OD max	Thickness	Surface finish options	End finish options
15	1/2"	Light	21.0 mm	21.4 mm	2.00 mm	Black/painted/HDG	PE/PG/Threaded
20	3/4"	Light	26.4 mm	26.9 mm	2.30 mm	Black/painted/HDG	PE/PG/Threaded
25	1"	Light	33.2 mm	33.8 mm	2.60 mm	Black/painted/HDG	PE/PG/Threaded
32	1 1/8"	Light	41.9 mm	42.5 mm	2.60 mm	Black/painted/HDG	PE/PG/Threaded
40	1 1/2"	Light	47.8 mm	48.4 mm	2.90 mm	Black/painted/HDG	PE/PG/Threaded
50	2"	Light	59.8 mm	60.2 mm	2.90 mm	Black/painted/HDG	PE/PG/Threaded
65	2 1/2"	Light	75.2 mm	76.0 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
80	3"	Light	87.9 mm	88.7 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
100	4"	Light	113.0 mm	113.9 mm	3.60 mm	Black/painted/HDG	PE/PG/Threaded
150	6"	Light	155.1 mm	155.1 mm	3.50 mm	Black/painted/HDG	PE/PG/Threaded
200*	8"	Light	219.1 mm	219.1 mm	4.80 mm	Black/painted/HDG	PE/PG/Threaded
15	1/2"	Medium	21.1 mm	21.7 mm	2.60 mm	Black/painted/HDG	PE/PG/Threaded
20	3/4"	Medium	26.6 mm	27.2 mm	2.60 mm	Black/painted/HDG	PE/PG/Threaded
25	1"	Medium	33.4 mm	34.2 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
32	1 1/8"	Medium	42.1 mm	42.9 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
40	1 1/2"	Medium	48.0 mm	48.8 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
50	2"	Medium	59.8 mm	60.8 mm	3.60 mm	Black/painted/HDG	PE/PG/Threaded
65	2 1/2"	Medium	75.4 mm	76.6 mm	3.60 mm	Black/painted/HDG	PE/PG/Threaded
80	3"	Medium	88.1 mm	89.5 mm	4.00 mm	Black/painted/HDG	PE/PG/Threaded
100	4"	Medium	113.3 mm	114.9 mm	4.50 mm	Black/painted/HDG	PE/PG/Threaded
125	5"	Medium	138.7 mm	140.6 mm	5.00 mm	Black/painted/HDG	PE/PG/Threaded
150	6"	Medium	164.1 mm	166.1 mm	5.00 mm	Black/painted/HDG	PE/PG/Threaded
15	1/2"	Heavy	21.1 mm	21.7 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
20	3/4"	Heavy	26.6 mm	27.2 mm	3.20 mm	Black/painted/HDG	PE/PG/Threaded
25	1"	Heavy	33.4 mm	34.2 mm	4.00 mm	Black/painted/HDG	PE/PG/Threaded
32	1 1/8"	Heavy	42.1 mm	42.9 mm	4.00 mm	Black/painted/HDG	PE/PG/Threaded
40	1 1/2"	Heavy	48.0 mm	48.8 mm	4.00 mm	Black/painted/HDG	PE/PG/Threaded
50	2"	Heavy	59.8 mm	60.8 mm	4.50 mm	Black/painted/HDG	PE/PG/Threaded
65	2 1/2"	Heavy	75.4 mm	76.6 mm	4.50 mm	Black/painted/HDG	PE/PG/Threaded
80	3"	Heavy	88.1 mm	89.5 mm	5.00 mm	Black/painted/HDG	PE/PG/Threaded
100	4"	Heavy	113.3 mm	114.9 mm	5.40 mm	Black/painted/HDG	PE/PG/Threaded
125	5"	Heavy	138.7 mm	140.6 mm	5.40 mm	Black/painted/HDG	PE/PG/Threaded
150	6"	Heavy	164.1 mm	166.1 mm	5.40 mm	Black/painted/HDG	PE/PG/Threaded

\* 200 DN materials and manufacturing process conforms to AS 2074 but 200 mm exceeds the range of diameters prescribed by this product standard.

PE: Plain End  
RG: Rolled Groove  
HDG: Hot dipped Galvanizing

Activ Fire Certificate : afp - 2977





**ACTIVFIRE**  
ACTIVE FIRE PROTECTION - PRODUCT CERTIFICATION

CSIRO Verification Services  
Clayton, Victoria, Australia  
+61 (0)3 9541 2777  
http://www.activfire.gov.au/

## Certificate of Conformity

Certificate num.	Registration date	Version	Issue date	Valid until	Page 1 of 3
<b>afp - 3206</b>	1-Dec-2017	Number 2	20-Feb-2018	30-Apr-2019	

**Product designation**  
Surya, ASTM A135/A53 Series, Schedule 10, steel fire protection pipe  
(Refer to the Schedule/enclosures for further specified details)


**Agent/distributor**  
Marubeni-Itochu Steel Oceania Pty Ltd  
Level 25, 570 Bourke Street, MELBOURNE, VIC, AUSTRALIA, 8001

**Registrant**  
Surya Roshni Limited  
Prakesh Nagar, Sankhol, BAHADURGARH, HARYANA, INDIA, 124507

**Manufacturer**  
Surya Roshni Limited  
Prakesh Nagar, Sankhol, BAHADURGARH, HARYANA, INDIA, 124507  
Manufacturing unit (Primary)  
Surya Roshni Limited  
Survey No. 188, Anjar Munda Highway, Bhowad, Anjar, KUTCH, GUJARAT, INDIA, 370130

**Conformance criteria and evaluation**  
The Surya, ASTM A135/A53 Series, Schedule 10, steel fire protection pipe has been evaluated and verified as conforming with the relevant requirements of the following criteria.  
1. Underwriters Laboratories - Evaluation and listing, 'UL listing',  
2. ASTM A53/A53M, 'Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless',  
3. ASTM A135/A135M, 'Standard Specification for Electric-Resistance-Welded Steel Pipe'.


**Limitations/conditions of conformance**  
Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having jurisdiction.  
Specified limitations/conditions, determined from the evaluation for conformity, include the following:  
(Limitations/conditions of conformance continue)


Issued by  
  
David Whittaker  
Executive Officer - ActivFire Scheme



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This certificate remains the property of CSIRO and may be subject to amendment, suspension or withdrawal at any time. The validity and authenticity of this certificate can be verified by the verification register located at <http://www.activfire.gov.au>





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## Certificate of Conformity

Certificate num.	Registration date	Version	Issue date	Valid until	Page 2 of 3
<b>afp - 3206</b>	1-Dec-2017	Number 2	20-Feb-2018	30-Apr-2019	

**System design and installation** shall be determined and verified in accordance with the performance and prescribed requirements of the regulations, standards and criteria as specified by the building code and authorities having jurisdiction.

**System design and installation requirements** may specify a minimum wall thickness that precludes the use of some of the scheduled pipe sizes for certain applications and locations.

The dimensional and mechanical compatibility of pipes must be verified with the sizes of components by which they are connected or to which they connect.

**Technical specification**  
The following details are a representative extract of the technical specification for the Surya, ASTM A135/A53 Series, Schedule 10, steel fire protection pipe and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

**Schedule of variant designations**  
The following is a schedule of validated variant designations of the certified/listed equipment.

DN	Inch	OD	Thickness	Surface finish options
65	2 1/2"	73.03 mm (2.875")	3.048 mm (0.120")	Black/Galvanized
80	3"	89.90 mm (3.5")	3.048 mm (0.120")	Black/Galvanized
100	4"	114.3 mm (4.5")	3.048 mm (0.120")	Black/Galvanized
150	6"	168.2 mm (6.625")	3.40 mm (0.134")	Black/Galvanized
200	8"	219.1 mm (8.625")	4.78 mm (0.188")	Black/Galvanized
250	10"	273.1 mm (10.75")	4.78 mm (0.188")	Black/Galvanized

**Schedule of properties/characteristics**

Chemical properties	
Composition, Max %	
Carbon	0.30%
Manganese	1.20%
Phosphorus	0.035%
Sulfur	0.035%
Physical properties	
Tensile Strength, Min.	415 N/mm <sup>2</sup> (MPa)
Yield Strength, Min.	240 N/mm <sup>2</sup> (MPa)
Elongation, Min. %	Reference ASTM A135

Activ Fire Certificate : afp - 3206

# Under renewal for change of name, all the renewed certificates would be provided upon request.





**American  
Petroleum  
Institute**



2015-313

### Certificate of Authority to use the Official API Monogram

License Number: 5CT-1378

ORIGINAL

The American Petroleum Institute hereby grants to

**SURYA GLOBAL STEEL TUBES LIMITED**  
Survey #188, Village Bhuvad  
Anjar Mundra Highway  
Taluka Anjar, Gujarat  
India

the right to use the Official API Monogram<sup>®</sup> on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1<sup>®</sup> and **API-5CT** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **5CT-1378**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Manufacturer of Electric-Welded Casing or Tubing Plain End - Group 1, H40/PSL 1, J55/PSL 1 and K55/PSL 1

QMS Exclusions: Design and Development; Servicing

Effective Date: **JULY 15, 2016**  
Expiration Date: **MAY 10, 2019**

To verify the authenticity of this license, go to [www.api.org/compositelist](http://www.api.org/compositelist).

Vice President, API Global Industry Services

API 5CT  
License No. : 1378



**American  
Petroleum  
Institute**



2015-313

### Certificate of Authority to use the Official API Monogram

License Number: 5L-0794

ORIGINAL

The American Petroleum Institute hereby grants to

**SURYA GLOBAL STEEL TUBES LIMITED**  
Survey #188, Village Bhuvad  
Anjar Mundra Highway  
Taluka Anjar, Gujarat 370130  
India

the right to use the Official API Monogram<sup>®</sup> on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1<sup>®</sup> and **API Spec 5L** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **5L-0794**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Manufacturer of Line Pipe Plain End at PSL 1 - Type of Pipe: HFW / Delivery Condition: M / Max. Grade: X70; / Delivery Condition: N / Max. Grade: X70 and / Delivery Condition: R / Max. Grade: X70; - Type of Pipe: SAWH / Delivery Condition: M / Max. Grade: X70; / Delivery Condition: N / Max. Grade: X70 and / Delivery Condition: R / Max. Grade: X70; Manufacturer of Line Pipe Plain End at PSL 2 - Type of Pipe: HFW / Delivery Condition: M / Max. Grade: X80 and / Delivery Condition: N / Max. Grade: X60; - Type of Pipe: SAWH / Delivery Condition: M / Max. Grade: X80 and / Delivery Condition: N / Max. Grade: X60; Manufacturer of Line Pipe Plain End at PSL 2 - Service Annex H - Type of Pipe: HFW / Delivery Condition: M / Max. Grade: X70 and / Delivery Condition: N / Max. Grade: X52; - Type of Pipe: SAWH / Delivery Condition: M / Max. Grade: X70 and / Delivery Condition: N / Max. Grade: X52; Manufacturer of Line Pipe Plain End at PSL 2 - Service Annex J - Type of Pipe: HFW / Delivery Condition: M / Max. Grade: X80 and / Delivery Condition: N / Max. Grade: X52; - Type of Pipe: SAWH / Delivery Condition: M / Max. Grade: X80 and / Delivery Condition: N / Max. Grade: X52

QMS Exclusions: Design and Development; Servicing

Effective Date: **JULY 15, 2016**  
Expiration Date: **MAY 10, 2019**

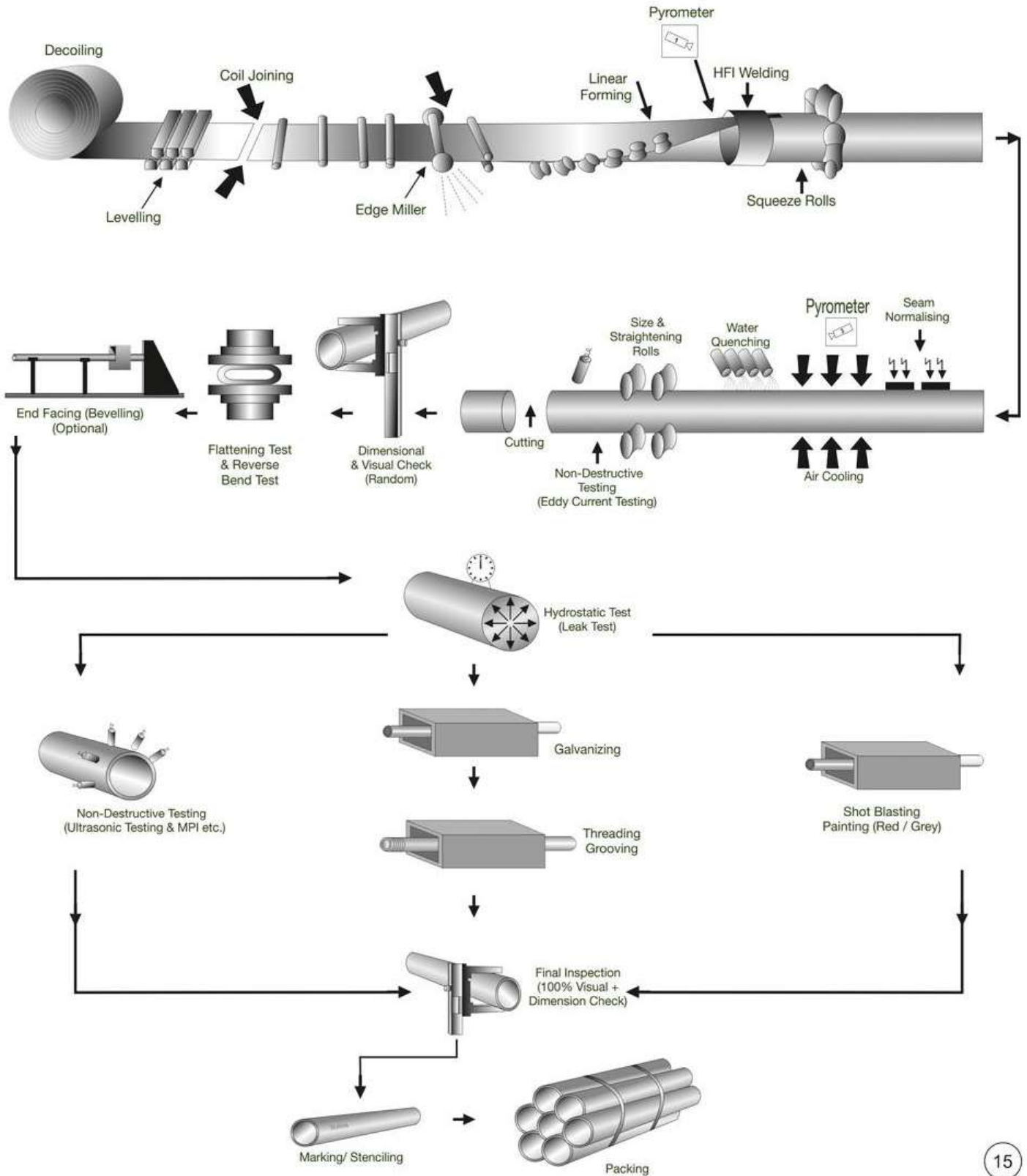
To verify the authenticity of this license, go to [www.api.org/compositelist](http://www.api.org/compositelist).

Vice President, API Global Industry Services

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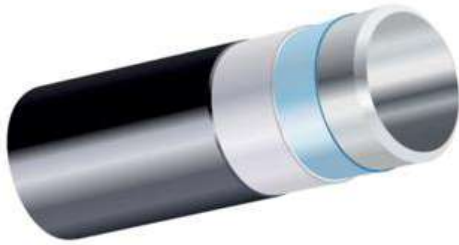


# FLOW CHART : ERW





# 3LPE/PP/FBE EXTERNAL COATING



Three Layer Polyethylene/ Polypropylene coating Systems (3LPE/PP), a multi layer coating composed of three functional components: a high performance fusion bonded epoxy (FBE), followed by a copolymer adhesive and an outer layer of polyethylene/polypropylene which provides tough, durable protection. 3LPE/PP Systems provide excellent pipeline protection for small and large diameter pipelines with moderately high operating temperatures.

## The 3-LPE/PP coated pipe are as follows:

Pipes are preheated, external blasting is carried out for cleaning and roughness, inspected, in case of high salt contamination the pipes are treated with phosphoric acid and washed with high pressure DM water to neutralize the chloride contents. The pipes are loaded on coating conveyor and heated between 180-230°C or as per powder manufacturer's recommendation;

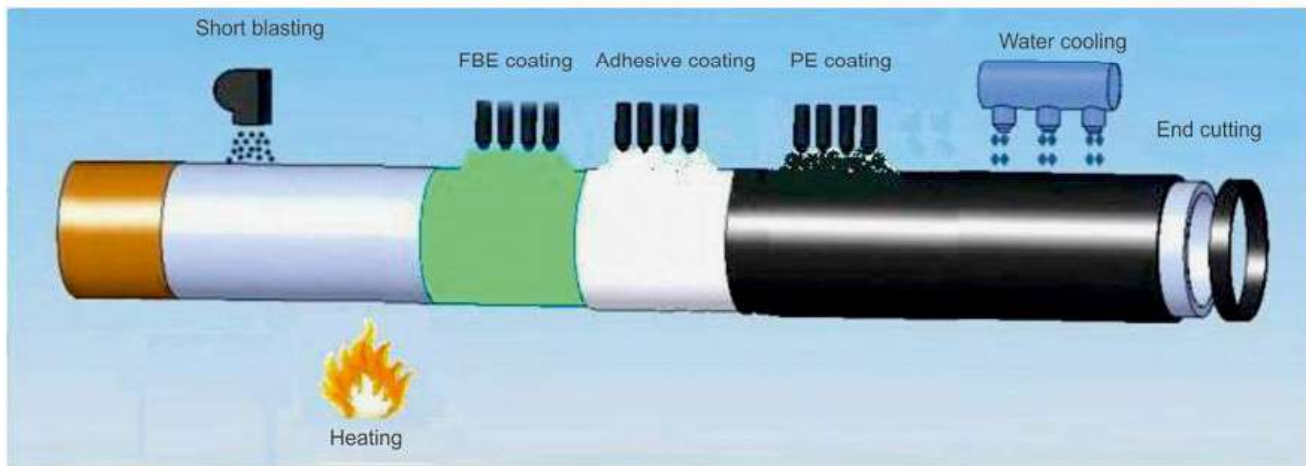


## THREE LAYER PE/PP COATING

**Layer 1:** This is the corrosion protective layer. This layer is of fusion bonded epoxy which offers very good corrosion protection. The fusion bonded epoxy has a very good bonding with the blasted steel surface.

**Layer 2:** This layer is the copolymer adhesive. The copolymer adhesive is a maleic anhydride grafted polyethylene compound. This material has good chemical bonding to the fusion bonded epoxy and the top layer polyethylene.

**Layer 3:** This layer is for physical protection and consists of polyethylene/Polypropylene. Since the copolymer adhesive and polyethylene are similar, they bond well with each other



## 3 LPE COATING



## END CLEANING



After coating, pipes are passed through quenching zone to bring down the temperature below 80°C for smooth handling and cut back operation as per client requirement.

Pipes are tested with Holiday detector with 25 KV voltage to detect pin holes and other various testing peel test, thickness check, impact test and lab tests etc for coated pipes and raw materials.

**Corrosion Resistance :**

- 3LPE/PP Coating prevents steel pipe from corrosion.
- Excellent chemical resistance properties and resistance to cathodic disbondment.
- 3LPE/PP Coating has got good resistance to moisture permeability.

**Mechanical Protection:**

- Top coat of polyethylene/polypropylene prevents abrasion and damage to fusion bonded epoxy during handling.
- High Bond Strength :
- The external coating and epoxy is bonded firmly to the steel pipe surface and this is mean to adhesion strength (ASTMD 4541).

**APPLICATIONS**

3LPE/PP coated steel pipes are mainly used in the following applications where the pipes are either buried or submerged:

- Drinking water pipe lines, Oil and gas pipelines
- In plant process water applications

**STANDARDS AND SPECIFICATIONS**

**3LPE/PP pipes are coated according to the following standards:**

- DIN 30670
- CSA Z245.21
- ISO 21809-1
- or any other International standard/client specs

**CAPACITY/RANGE**

Capacity per Hour  
 Minimum Pipe Diameter  
 Maximum Pipe Diameter  
 Minimum Pipe Length  
 Maximum Pipe Length

**FBE/3LPE/3LPP**

360 (M<sup>2</sup>)  
 114.3 MM (4.5")  
 1625.6 MM (64")  
 9.0 M (29.52')  
 12.8 M (41.98')

# INTERNAL COATING

A spraying nozzle used to spray the liquid epoxy inside the pipe as per the required thickness. Before applying the epoxy paint, internal surface of the pipes are blasted and cleaned.

**FEATURES OF INTERNAL EPOXY COATING**

- Increase gas flow
- Excellent Corrosion Resistance
- High Steel Adhesion
- Low mechanical & abrasion Resistance
- High Impermeability for water / gas
- Low Electrical Resistance
- Decrease line maintenance and up keep costs

**INTERNAL COATING**

Type of Coating	Capacity	Coating
INTERNAL COATING	360 SQM/HOUR PIPE SIZE - 8 3/8" - 64" LENGTH - 9 to 12.8 Meters	INTERNAL CLEANING & SPRAY PAINTING





## TECHNICAL DATA OF PIPES CONFORMING TO ASTM A-53 GR. A & B

NPS Designator	DN Designator	Outside Diameter		Schedule No	Wall Thickness		Mass of Plain end Pipe		Weight of Black & Galvanized Pipe Screwed & Socketed		Test Pressure		Pieces/ bundle
		Inch	mm		inch	mm	Kg/Mtr	lb/ft	lb/ft	Kg/Mtr	Grade A	Grade B	
		Mpa	Mpa										
½	15	0.840	21.3	40	0.109	2.77	1.27	0.85	0.86	1.27	4.8	4.8	120
¾	20	1.050	26.7	40	0.113	2.87	1.69	1.13	1.14	1.69	4.8	4.8	84
1	25	1.315	33.4	40	0.133	3.38	2.50	1.68	1.69	2.50	4.8	4.8	60
1¼	32	1.660	42.2	40	0.140	3.56	3.39	2.27	2.28	3.40	8.3	9	42
1½	40	1.900	48.3	40	0.145	3.68	4.05	2.72	2.74	4.04	8.3	9	36
2	50	2.375	60.3	40	0.154	3.91	5.44	3.66	3.68	5.46	15.9	17.2	26
2½	65	2.875	73.0	40	0.203	5.16	8.63	5.80	5.85	8.67	17.2	17.2	18
3	80	3.500	88.9	40	0.216	5.49	11.29	7.58	7.68	11.35	15.3	17.2	14
3½	90	4.000	101.6	40	0.226	5.74	13.57	9.12	9.27	13.71	14.0	16.3	12
4	100	4.500	114.3	40	0.237	6.02	16.07	10.80	10.92	16.23	13.1	15.2	10
5	125	5.563	141.3	40	0.258	6.55	21.77	14.63	14.90	22.07	11.5	13.4	7
6	150	6.625	168.3	40	0.280	7.11	28.26	18.99	19.34	28.58	10.5	12.3	7
8	200	8.625	219.1	40	0.322	8.18	42.55	28.58	29.35	43.73	9.2	10.8	—
10	250	10.750	273.0	20	0.250	6.35	41.75	28.06	-	-	5.8	6.8	—
10	250	10.750	273.0	40	0.365	9.27	60.29	40.52	-	-	8.4	9.9	—
12	300	12.750	323.8	20	0.250	6.35	49.71	33.41	-	-	4.9	5.7	—
12	300	12.750	323.8	30	0.330	8.38	65.18	43.81	-	-	6.4	7.5	—
12	300	12.750	323.8	STD	0.375	9.52	73.78	49.61	-	-	7.3	8.5	—
12	300	12.750	323.8	40	0.406	10.31	79.70	53.57	-	-	7.9	9.2	—
14	350	14.000	355.6	10	0.250	6.35	54.69	36.75	-	-	4.4	5.2	—
14	350	14.000	355.6	30	0.375	9.52	81.25	54.62	-	-	6.6	7.7	—
14	350	14.000	355.6	40	0.438	11.13	94.55	63.50	-	-	7.8	9	—
16	400	16.000	406.4	10	0.250	6.35	62.64	42.09	-	-	3.9	4.5	—
16	400	16.000	406.4	30	0.375	9.52	93.17	62.64	-	-	5.8	6.8	—
16	400	16.000	406.4	40	0.500	12.70	123.30	82.85	-	-	7.7	9	—

### Tolerances

Outside Diameter	Pipe Size upto & including DN 40 Pipe size DN 50 or larger	+/- 0.4 mm of OD +/- 1% of OD
Thickness	- 12.5% (max) / + Not specified	
Weight	+/- 10% of specified weight ( Mass)	
<b>Testing</b>		
Online NDT	For Pipes NPS 2 (DN 50) or larger Weld seam of each pipe shall be tested by Eddy Current Test	
Bend Test	For pipes upto & including DN 50 Bending angle 90° Bending radius 12 times to the OD of Tube (no crack in body & weld)	
Flattening (0° & 90°)	For pipes over DN 50 1. Flatten upto 2/3 of OD for ductility of weld 2. Flatten upto 1/3 of OD for ductility of steel 3. Full Flattening for testing of lamination or Unsound material	

### Mechanical Properties

	Grade A	Grade B
Yield Strength	205 Mpa (Min)	240 Mpa (Min)
Tensile Strength	330 Mpa (Min)	415 Mpa (Min)
Elongation	As per ASTM A-53	

### Chemical Composition (Max %)

	Carbon	Manganese	Phosphorus	Sulphur	Copper	Nickel	Chromium	Molybdenum	Vanadium
Grade A	0.25	0.95	0.05	0.045	0.40	0.40	0.40	0.15	0.08
Grade B	0.30	1.20	0.05	0.045	0.40	0.40	0.40	0.15	0.08

Cu + Ni + Cr + Mb + V < 1%

### Galvanizing

(As per ASTM A-53 with test method ASTM A 90/A90M)

Minimum of any surface of specimen	0.400 Kg/M <sup>2</sup> (55 microns approx)
Average of one specimen	0.490 Kg/M <sup>2</sup> (70 microns approx)
Average of two specimen	0.550 Kg/M <sup>2</sup> (79 microns approx)

### Marking:

Online stenciling as per the standard & client requirements.

**TECHNICAL DATA OF PIPES CONFORMING TO EN:10255**

Nominal Size		Class	Outside Diameter (mm)		Thick. (mm)	Weight (Plain End) (Kg/mtr.)	Weight (Socketed) (Kg/mtr.)	Pcs per Bundle
MM	Inch		Min	Max				
15mm	1/2	L1	21.0	21.7	2.30	1.08	1.09	160
20mm	3/4	L1	26.4	27.1	2.30	1.39	1.40	110
25mm	1	L1	33.2	34.0	2.90	2.20	2.22	80
32mm	1 1/4	L1	41.9	42.7	2.90	2.82	2.85	61
40mm	1 1/2	L1	47.8	48.6	2.90	3.24	3.28	51
50mm	2	L1	59.6	60.7	3.20	4.49	4.56	37
65mm	2 1/2	L1	75.2	76.3	3.20	5.73	5.85	27
80mm	3	L1	87.9	89.4	3.60	7.55	7.72	24
100mm	4	L1	113.0	114.9	4.00	10.80	11.10	16
15mm	1/2	L2	21.0	21.4	2.00	0.947	0.956	160
20mm	3/4	L2	26.4	26.9	2.30	1.380	1.390	110
25mm	1	L2	33.2	33.8	2.60	1.98	2.00	80
32mm	1 1/4	L2	41.9	42.5	2.60	2.540	2.570	61
40mm	1 1/2	L2	47.8	48.4	2.90	3.230	3.270	51
50mm	2	L2	59.6	60.2	2.90	4.08	4.15	37
65mm	2 1/2	L2	75.2	76.0	3.20	5.710	5.830	27
80mm	3	L2	87.9	88.7	3.20	6.720	6.890	24
100mm	4	L2	113.0	113.9	3.60	9.75	10.00	16
15mm	1/2	L	21.0	21.7	2.30	1.08	1.09	160
20mm	3/4	L	26.4	27.1	2.30	1.40	1.41	110
25mm	1	L	33.2	34.0	2.90	2.20	2.22	80
32mm	1 1/4	L	41.9	42.7	2.90	2.82	2.85	61
40mm	1 1/2	L	47.8	48.6	2.90	3.25	3.29	51
50mm	2	L	59.6	60.7	3.20	4.51	4.58	37
65mm	2 1/2	L	75.2	76.0	3.20	5.75	5.87	27
80mm	3	L	87.9	88.7	3.20	6.76	6.93	24
100mm	4	L	113.0	113.9	3.60	9.83	10.10	16
125mm	5	L	138.5	140.8	4.50	15.00	15.50	10
150mm	6	L	163.9	166.5	4.50	17.80	18.40	7
15mm	1/2	M	21.0	21.8	2.60	1.21	1.22	130
20mm	3/4	M	26.5	27.3	2.60	1.56	1.57	100
25mm	1	M	33.3	34.2	3.20	2.41	2.43	65
32mm	1 1/4	M	42.0	42.9	3.20	3.10	3.13	51
40mm	1 1/2	M	47.9	48.8	3.20	3.56	3.60	44
50mm	2	M	59.7	60.8	3.60	5.03	5.10	30
65mm	2 1/2	M	75.3	76.6	3.60	6.42	6.54	24
80mm	3	M	88.0	89.5	4.00	8.36	8.53	19
100mm	4	M	113.1	115.0	4.50	12.20	12.50	14
125mm	5	M	138.5	140.8	5.00	16.60	17.10	10
150mm	6	M	163.9	166.5	5.00	19.80	20.40	7
15mm	1/2	H	21.0	21.8	3.20	1.44	1.45	110
20mm	3/4	H	26.5	27.3	3.20	1.87	1.88	80
25mm	1	H	33.3	34.2	4.00	2.93	2.95	55
32mm	1 1/4	H	42.0	42.9	4.00	3.79	3.82	44
40mm	1 1/2	H	47.9	48.8	4.00	4.37	4.41	37
50mm	2	H	59.7	60.8	4.50	6.19	6.26	27
65mm	2 1/2	H	75.3	76.6	4.50	7.93	8.05	20
80mm	3	H	88.0	89.5	5.00	10.30	10.50	16
100mm	4	H	113.1	115.0	5.40	14.50	14.80	12
125mm	5	H	138.5	140.8	5.40	17.90	18.40	10
150mm	6	H	163.9	166.5	5.40	21.30	21.90	7

**Tolerances**

Outside Diameter as per above table

Thickness	Medium	Heavy	Light L	Light L1	Light L2
		±10%	±10%	±10%	-8%

Weight ±7.5% for M, H & L series (on lot) and +10%/-8% for L1 & L2 series

**Mechanical Properties**

Yield Strength	195 MPa (Minimum)
Tensile Strength	320 to 520 Mpa
%Elongation	20% Minimum

**Chemical Properties**

Carbon	0.20 % Max
Manganese	1.40 % Max
Phosphorus	0.035 % Max
Sulphur	0.030 % Max

**Bend Test**

Black Tube	For Tubes upto & including 2"
Bending Angle	90°
Bending Radius	As per EN 10255
Weld Position	outside of the bend
Galvanized Tube	
Bending angle	90°
Bending radius	8 times to the OD of Tube
Weld Position	outside of the bend

**Flattening Test**

For Tubes above 2"  
 1. Flatten upto 75% of tube dia for weld test (Weld at 12 or 3 O'clock position)  
 2. Flatten upto 60% of tube dia for Base metal test

**Leak Tightness Test**

100% Hydrotesting at 50 bar or online eddy current testing

**Galvanizing Test**

As per EN 10240 / EN ISO 1461

**Threading**

As per EN 10226-1



## TECHNICAL DATA OF PIPES CONFORMING TO EN : 10217-1

TECHNICAL DATA OF PIPES CONFORMING TO EN : 10217-1																		
SIZE OD (mm)	* WALL THICKNESS (mm)																	
	1.8	2	2.3	2.6	2.9	3.2	3.6	4	4.5	5	5.6	6.3	7.1	8	8.8	10	11	12.5
21.3																		
26.9																		
33.7																		
42.4																		
48.3																		
60.3																		
76.1																		
88.9																		
114.3																		
139.7																		
168.3																		
219.1																		
244.5																		
273.0																		
323.9																		
355.6																		
406.4																		

\* Preferred thickness are as per shaded area with blue color.

### Tolerances on dimensions

Outside Diameter	For ≤ 219.1: ±1% or ±0.5 mm whichever is greater; For > 219.1: ±0.75% or ± 6 mm whichever is smaller
Thickness	For T ≤ 5mm: ±10% or ± 0.3mm whichever is greater; for 5 < T ≤ 40 mm: ± 8% or ± 2 mm whichever is smaller
Height of weld seam	Outside trimmed and inside 1.5 mm max.
Straightness	0.15% of total length and 3 mm over any 1 m length

### MECHANICAL PROPERTIES

Grade	YS Min MPa		TS Min MPa	%El Minimum	
	T ≤ 16	16 < T ≤ 40		long.	trans.
P195TR1	195	185	320-440	27	25
P235TR1	235	225	360-500	25	23
P265TR1	265	255	410-570	21	19

### CHEMICAL COMPOSITION (%)

Grade	C (Max)	Si (Max)	Mn (Max)	P (Max)	S (Max)	Cr (Max)	Mo (Max)	Ni (Max)	Al (Min)	Cu (Max)	Nb (Max)	Ti (Max)	V (Max)	Cr+Cu+Mo+Ni (Max)
P195TR1	0.130	0.350	0.700	0.025	0.020	0.300	0.080	0.300	--	0.300	0.010	0.040	0.020	0.700
P235TR1	0.160	0.350	1.200	0.025	0.020	0.300	0.080	0.300	--	0.300	0.010	0.040	0.020	0.700
P265TR1	0.200	0.400	1.400	0.025	0.020	0.300	0.080	0.300	--	0.300	0.010	0.040	0.020	0.700

### Drift Expanding Test : For sizes D≤150mm & T≤10

Grade	P195 TR1	P235 TR1	P265 TR1
% increase in diameter			
For d/D≤0.8	10	10	8
For d/D>0.8	12	12	10

**Flattening Test** Flatten until the distance (H) between plates reaches the value calculated by formula:

$$H = \frac{(1 + C)}{C + (T/D)} \times T$$

C - 0.9 for steel grade P195TR1 & P235TR1

C - 0.7 for steel grade P265TR1

D - Diameter of the tube; T - Thickness of the tube; C - Constant

**Leak Tightness Test** 100% Hydrotesting at 70 bar or Electromagnetic testing

**Non Destructive Test** Full length of weld seam shall be subjected to non destructive test for the detection of longitudinal imperfections

## TECHNICAL DATA OF PIPES CONFORMING TO BS EN 39

(Non alloy steel tube for use with EN74 couplers in the construction of false work and working scaffolds)

DESIGNATION OF THREAD	NOMINAL DIAMETER	TYPE	OUTSIDE DIMETER (MM)			STANDARD THICKNESS (MM)	WEIGHT (KG/MTR)	PCS/ BUNDLE
			STANDARD	MINIMUM	MAXIMUM			
1½"	40	3	48.3	47.8	48.8	3.20	3.56	61
1½"	40	4	48.3	47.8	48.8	4.00	4.37	61
--	--	--	38.1	37.5	38.5	3.20	2.75	61
--	--	--	38.1	37.5	38.5	4.00	3.36	61

## CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

STEEL GRADE		CHEMICAL COMPOSITION						MECHANICAL PROPERTIES		
STEEL NAME	STEEL NUMBER	C % max	Mn % max	P % max	S % max	Si %max	Al % (MIN.)	YIELD STRENGTH (Mpa) MIN.	TENSILE STRENGTH (MPa)	% ELONGATION (MIN)
S235GT	1.0106	0.200	1.400	0.040	0.045	0.040	0.020	235	340 - 520	24

\* The steel shall be killed.

## TECHNICAL DETAILS

<b>Characteristics</b> Thickness Straightness Mass per unit length Inside diameter of tube  Flattening Test  Galvanizing Coating Marking  End Uses	<b>Tolerances &amp; Technical details</b> -10% on standard wall thickness 0.20% of total length Not less than 7.5% the specified mass on individual lengths Shall allow insertion of a gauge of diameter 37.7mm for a minimum length of 200mm from both pipe ends.  Keep the weld at 90° and flatten upto 75% of OD, No cracks or flaws are allowed on the weld. Further flatten upto 60% of OD, No cracks or flaws are allowed in the material elsewhere than in the weld.  As per EN 10240 B2 (40Microns minimum ) (a) Embossing " BS EN 39 - 3 or 4 and  SURYA at every meter on pipe as per customer requirement. (b) Stencilling " BS EN 39 - 3 or 4 and  SURYA at every meter on pipe as per customer requirement.  (a) 48.3mm (1½") pipes are used for Standard and Ledgers of different lengths. (b) 38.1mm pipes used for Universal Jack.
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**Note:-** In addition to the above, we can manufacture the pipes related to Scaffolding in other sizes & higher grades like:- S275J0H, S275J2H, S355J0H & S355J2H etc as per the customer requirement.





## TECHNICAL DATA OF PIPES CONFORMING TO AS:1074

Size		Class	O.D. (mm)		Thick. (mm)	Weight (Plain End) (Kg/mtr.)	Weight (Socketed) (Kg/mtr.)	Pcs per Bundle
			Min	Max				
Inch	MM							
½"	15	L	21.0	21.4	2.00	0.947	0.956	<b>217</b>
¾"	20	L	26.4	26.9	2.30	1.380	1.390	<b>127</b>
1"	25	L	33.2	33.8	2.60	1.980	2.000	<b>91</b>
1¼"	32	L	41.9	42.5	2.60	2.540	2.570	<b>61</b>
1½"	40	L	47.8	48.4	2.90	3.230	3.270	<b>61</b>
2"	50	L	59.6	60.2	2.90	4.080	4.150	<b>37</b>
2½"	65	L	75.2	76.0	3.20	5.710	5.830	<b>37</b>
3"	80	L	87.9	88.7	3.20	6.720	6.890	<b>19</b>
4"	100	L	113.0	113.9	3.60	9.750	10.000	<b>19</b>
½"	15	M	21.1	21.7	2.60	1.210	1.220	<b>217</b>
¾"	20	M	26.6	27.2	2.60	1.560	1.570	<b>127</b>
1"	25	M	33.4	34.2	3.20	2.410	2.430	<b>91</b>
1¼"	32	M	42.1	42.9	3.20	3.100	3.130	<b>61</b>
1½"	40	M	48.0	48.8	3.20	3.570	3.610	<b>61</b>
2"	50	M	59.8	60.8	3.60	5.030	5.100	<b>37</b>
2½"	65	M	75.4	76.6	3.60	6.430	6.550	<b>37</b>
3"	80	M	88.1	89.5	4.00	8.370	8.540	<b>19</b>
4"	100	M	113.3	114.9	4.50	12.200	12.500	<b>19</b>
5"	125	M	138.7	140.6	5.00	16.600	17.100	<b>13</b>
6"	150	M	164.1	166.1	5.00	19.700	20.300	<b>10</b>
½"	15	H	21.1	21.7	3.20	1.440	1.450	<b>217</b>
¾"	20	H	26.6	27.2	3.20	1.870	1.880	<b>127</b>
1"	25	H	33.4	34.2	4.00	2.940	2.960	<b>91</b>
1¼"	32	H	42.1	42.9	4.00	3.800	3.830	<b>61</b>
1½"	40	H	48.0	48.8	4.00	4.380	4.420	<b>61</b>
2"	50	H	59.8	60.8	4.50	6.190	6.260	<b>37</b>
2½"	65	H	75.4	76.6	4.50	7.930	8.050	<b>37</b>
3"	80	H	88.1	89.5	5.00	10.300	10.500	<b>19</b>
4"	100	H	113.3	114.9	5.40	14.500	14.800	<b>19</b>
5"	125	H	138.7	140.6	5.40	17.900	18.400	<b>13</b>
6"	150	H	164.1	166.1	5.40	21.300	21.900	<b>10</b>

### Tolerances

Outside Diameter as per above table

Thickness	Light	Medium	Heavy
	-8%	-10%	-10%

+unlimited +unlimited +unlimited

Weight -8% & +10% (for single tube)

### Mechanical Properties

Yield Strength 195 Mpa (Minimum)  
Tensile Strength 320 to 460 Mpa  
%Elongation 20% Minimum

### Chemical Properties

Phosphorus 0.045 % Max  
Sulphur 0.045 % Max  
Carbon Equivalent 0.40 % Max

### Ductility Test

For Tubes upto & including 2"

Black Tube	Bending angle	180°
	Bending radius	6 times to the OD of Tube
	Weld Position	3 O'clock
Galvanized Tube	Bending angle	90°
	Bending radius	8 times to the OD of Tube
	Weld Position	3 O'clock

### Ductility Test

For Tubes above 2"

1. Flatten upto 75% of tube dia for weld test (Weld at 3 O'clock position)
2. Flatten upto 60% of tube dia for Base metal test

### Leak Tightness Test

100% Hydrotesting at 5 MPa or online eddy current testing or ultrasonic testing

### Mass of Zinc Coating

300 gm / meter<sup>2</sup> as per AS/NZS 4792- 2006

### Galvanizing Test

1. Bore test (for tubes upto 1")
2. Copper Sulphate Test

## TECHNICAL DATA OF PIPES CONFORMING TO EN : 10219 - 1 & 2 CIRCULAR HOLLOW SECTION

SIZE OD (mm)	WALL THICKNESS (mm)										
	2	2.5	3	4	5	6	6.3	8	10	12	12.5
	Mass per unit length (Kg/mtr)										
21.3	0.95	1.16	1.35								
26.9	1.23	1.50	1.77								
33.7	1.56	1.92	2.27								
42.4	1.99	2.46	2.91	3.79							
48.3	2.28	2.82	3.35	4.37	5.34						
60.3	2.88	3.56	4.24	5.55	6.82						
76.1	3.65	4.54	5.41	7.11	8.77	10.40	10.80				
88.9	4.29	5.33	6.36	8.38	10.30	12.30	12.80				
101.6	4.91	6.11	7.29	9.63	11.90	14.10	14.80				
114.3		6.89	8.23	10.90	13.50	16.00	16.80	21.00			
139.7			10.10	13.40	16.60	19.80	20.70	26.00	32.00		
168.3			12.20	16.20	20.10	24.00	25.20	31.60	39.00		
219.1				21.20	26.40	31.50	33.10	41.60	51.60	61.30	63.70
244.5					29.50	35.30	37.00	46.70	57.80	68.80	71.50
273.0					33.00	39.50	41.40	52.30	64.90	77.20	80.30

### Tolerances on dimensions

Characteristics	Tolerances
Outside Dimensions	±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm
Thickness	For D ≤ 406.4 mm, T ≤ 5mm : ±10%, T > 5 mm ± 0.5mm, For D > 406.4 mm; ±10% with a maximum of ± 2mm
Out-of-Roundness	2% for hollow sections having a diameter to thickness ratio not exceeding 100
Straightness	0.20% of total length and 3mm over any 1 m length
Mass per unit length	± 6% on individual delivered lengths

### MECHANICAL PROPERTIES

Grade	YS Min MPa T ≤ 16mm	TS Min MPa		%El Min	Minimum impact energy J		
		T < 3mm	3 ≤ T ≤ 40mm	T ≤ 40	-20° C	0° C	20° C
		S235 JRH	235	360-510	360-510	24	--
S275 J0H	275	430-580	410-560	20	--	27	--
S275 J2H					27	--	--
S355 J0H	355	510-680	470-630	20	--	27	--
S355 J2H					27	--	--
S355 K2H					40	--	--

### CHEMICAL COMPOSITION (%) Max.

Grade	C	Si	Mn	P	S	N	CEV
S235 JRH	0.170	--	1.400	0.040	0.040	0.009	0.350
S275 J0H	0.200	--	1.500	0.035	0.035	0.009	0.400
S275 J2H	0.200	--	1.500	0.030	0.030	--	0.400
S355 J0H	0.220	0.550	1.600	0.035	0.035	0.009	0.450
S355 J2H	0.220	0.550	1.600	0.030	0.030	--	0.450
S355 K2H	0.220	0.550	1.600	0.030	0.030	--	0.450



## TECHNICAL DATA OF PIPES CONFORMING TO AS / NZS : 1163

SIZE	WALL THICKNESS (mm)																				
CHS OD	2.30	2.60	3.00	3.20	3.50	3.60	4.00	4.50	4.80	4.90	5.00	5.40	5.50	5.90	6.00	6.40	7.10	8.20	9.30	9.50	12.70
(mm)	Mass per unit length (Kg/mtr)																				
21.3		1.20		1.43		1.57															
26.9		1.56		1.87			2.26														
33.7				2.41			2.93	3.24													
42.4				3.09			3.79			4.53											
48.3				3.56			4.37					5.71									
60.3						5.03		6.19				7.31									
76.1	4.19			5.75		6.44		7.95						10.20							
88.9		5.53		6.76			8.38		9.96		10.30		11.30	12.10							
101.6		6.35		7.77			9.63				11.90										
114.3				8.77			9.83		12.20	13.00		14.50			16.00						
139.7			10.10		11.80						16.60	17.90									
165.1			12.00		13.90						19.70	21.30									
168.3									19.40							25.60	28.20				
219.1									25.40							33.60		42.60			
273.1									31.80							42.10			60.50		
323.9																50.10				73.70	97.50
355.6																55.10				81.10	107.00
406.4																63.10				93.00	123.00

### Tolerances on dimensions

#### Characteristics

#### External Dimensions

#### Thickness

#### Out-of-roundness

#### Straightness

#### Mass per unit length

#### Tolerances

±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm

For  $d_o \leq 406.4$  mm: ±10%; For  $d_o > 406.4$  mm: ±10% with a max of ±2 mm

2% for hollow sections having a diameter to thickness ratio not exceeding 100

0.20% of total length

Not less than 0.96 times the specified mass on individual lengths

## MECHANICAL PROPERTIES

Grade	YS Min	TS Min	%El Min			Minimum Absorbed Energy, Joules					
	MPa	MPa	$d_o/t$			Avg. of 3 tests			Individual tests		
			≤15	>15≤30	>30	10x10	10x7.5	10x5.0	10x10	10x7.5	10x5.0
C250, C250L0	250	320	18	20	22	27	22	18	20	16	13
C350, C350L0	350	430	16	18	20	27	22	18	20	16	13
C450, C450L0	450	500	12	14	16	27	22	18	20	16	13

## CHEMICAL COMPOSITION (%) Max.

Grade	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	Al	V+Nb	CE
C250, C250L0	0.120	0.05	0.50	0.03	0.03	0.25	0.25	0.15	0.10	0.02	0.01	0.04	0.10	0.03	0.25
C350, C350L0	0.200	0.45	1.60	0.03	0.03	0.25	0.25	0.30	0.10	0.10	0.01	0.04	0.10	0.11	0.43
C450, C450L0	0.200	0.45	1.70	0.03	0.03	0.25	0.25	0.50	0.35	0.10	0.01	0.04	0.10	0.11	0.43

### Manipulation (Bend Test)

For Galvanized Tubes upto & including 60.3 mm

Bending angle 90°

Bending radius 6 times to the OD of Tube

### Flattening Test

1. Flatten upto 75% of tube dia for weld test (Weld at 45° position for  $d_o \leq 60$ mm)

2. Flatten upto 75% of tube dia for weld test (Weld at 90° position for  $d_o > 60$ mm)

**TECHNICAL DATA OF PIPES CONFORMING TO ASTM A252**

OUTSIDE DIAMETER		DIAMETER TOLERANCE (mm) (Inch)		STANDARD THICKNESS		WEIGHT	
(Inch)	(mm)	(Min)	(Max)	(mm)	(Inch)	(Kg/mtr)	(lb/ft)
6"	152.4	150.88 (5.940")	153.92 (6.059")	3.40	0.134	12.51	8.40
				3.58	0.141	13.14	8.83
				3.96	0.156	14.50	9.75
				4.17	0.164	15.23	10.23
				4.37	0.172	15.95	10.72
8 <sup>5</sup> / <sub>8</sub> "	219.1	216.91 (8.539")	221.29 (8.712")	4.37	0.172	23.13	15.54
				4.78	0.188	25.24	16.96
				5.16	0.203	27.20	18.28
				5.56	0.219	29.29	19.68
				6.35	0.250	33.31	22.38
				7.04	0.277	36.79	24.72
				7.92	0.312	41.27	27.73
				8.18	0.322	42.54	28.58
				8.74	0.344	45.33	30.46
				9.53	0.375	49.23	33.08
				11.13	0.438	57.06	38.34
12.70	0.500	64.64	43.43				
10 <sup>3</sup> / <sub>4</sub> "	273.0	270.27 (10.640")	275.73 (10.855")	4.17	0.164	27.62	18.56
				4.37	0.172	28.94	19.45
				4.55	0.179	30.10	20.22
				4.78	0.188	31.59	21.22
				5.16	0.203	34.06	22.88
				5.56	0.219	36.69	24.65
				5.84	0.230	38.49	25.86
				6.35	0.250	41.75	28.06
				7.09	0.279	46.47	31.22
				7.80	0.307	51.00	34.27
				8.74	0.344	56.94	38.26
				9.27	0.365	60.29	40.51
				11.13	0.438	71.84	48.27
12.70	0.500	81.52	54.78				
12 <sup>3</sup> / <sub>4</sub> "	323.8	320.56 (12.620")	327.04 (12.875")	4.78	0.188	37.57	25.24
				5.16	0.203	40.52	27.22
				5.56	0.219	43.65	29.33
				6.35	0.250	49.71	33.40
				7.14	0.281	55.74	37.45
				7.92	0.312	61.73	41.48
				8.38	0.330	65.20	43.81
				8.74	0.344	67.89	45.61
				9.53	0.375	73.82	49.60
				11.13	0.438	85.78	57.64
				12.70	0.500	97.43	65.47



**TECHNICAL DATA OF PIPES CONFORMING TO ASTM A252**

OUTSIDE DIAMETER		DIAMETER TOLERANCE (mm) (Inch)		STANDARD THICKNESS		WEIGHT	
(Inch)	(mm)	(Min)	(Max)	(mm)	(Inch)	(Kg/mtr)	(lb/ft)
14"	355.6	352.04 (13.859")	359.156 (14.140")	4.78	0.188	41.31	27.76
				5.16	0.203	44.56	29.94
				5.56	0.219	48.02	32.26
				5.84	0.230	50.39	33.86
				6.35	0.250	54.69	36.75
				7.14	0.281	61.33	41.21
				7.92	0.312	67.94	45.65
				8.74	0.344	74.74	50.22
				9.53	0.375	81.29	54.62
				11.13	0.438	94.51	63.50
				11.91	0.469	100.96	67.84
				12.70	0.500	107.39	72.16
16"	406.40	402.34 (15.840")	410.46 (16.159")	4.78	0.188	47.29	31.78
				5.16	0.203	51.02	34.28
				5.56	0.219	54.98	36.95
				5.84	0.230	57.71	38.77
				6.35	0.250	62.64	42.09
				7.14	0.281	70.27	47.22
				7.92	0.312	77.87	52.32
				8.74	0.344	85.68	57.57
				9.53	0.375	93.22	62.64
				11.13	0.438	108.44	72.86
				11.91	0.469	115.89	77.87


Chemical Properties :- Phosphorus = 0.050% (Max.)

Mechanical Properties :-

MECHANICAL PROPERTIES			
	Grade 1	Grade 2	Grade 3
Tensile Strength (Mpa)	345	415	455
Yield Strength (Mpa)	205	240	310
%Elongation in (50mm)	30	25	20
* Deduction	1.50	1.25	1.00

\* For nominal wall thicknesses less than 7.90 mm, the deduction from the basic minimum elongation in 2 in. (50.80 mm) for each 0.8 mm decrease in nominal wall thickness below 7.9 mm, in percentage points.

**TECHNICAL DETAILS**

Characteristics	Tolerances & Technical details
Outside Diameter (OD)	For Round Pipes, $\pm 1\%$ of OD
Thickness	-12.5% of specific wall thickness.
Weight	For each tube - 5% & +15% of standard weight (Calculated Weight).
Length	Pipe shall be furnished in single random length, double random length or in uniform length as per the customer requirement.
Straightness	The finished pipe shall be reasonably straight.
End	Pipe shall be finished with Square cut (plain End) or Bevel End (30° -0/+5°).
Surface Protection	Black & Galvanized coating as per Customer requirement.
Marking (Stencilling)	"  <b>SURYA</b> , Specification designation, Grade, Outside diameter, Thickness, Process of manufacturing & Heat No." on pipe and any thing specific as per the customer requirement.

**TECHNICAL DATA OF PIPES CONFORMING TO ASTM A795**

(This specification covers Black and Zinc-Coated (Hot-Dipped Galvanized) welded steel pipe in use for fire protection systems.)

**Dimensions, Weights, and Test Pressure For Light-Weight Fire Protection Pipe—Schedule 10A**

NPS DESIGNATOR	OUTSIDE DIAMETER	DIAMETER TOLERANCE		STANDARD THICKNESS		SCHEDULE	WEIGHT		TEST PRESSURE	
	(mm)	(Min)	(Max)	(mm)	(Inch)		(Kg/mtr)	(lb/ft)	(psi)	(kPa)
3/4	26.7	26.30	27.10	2.11	0.083	10	1.28	0.86	700	4800
1	33.4	33.00	33.80	2.77	0.109	10	2.09	1.41	700	4800
1¼	42.2	41.80	42.60	2.77	0.109	10	2.69	1.81	1000	6900
1½	48.3	47.90	48.70	2.77	0.109	10	3.11	2.09	1000	6900
2	60.3	59.70	60.90	2.77	0.109	10	3.93	2.64	1000	6900
2½	73.0	72.27	73.73	3.05	0.120	10	5.26	3.53	1000	6900
3	88.9	88.01	89.79	3.05	0.120	10	6.46	4.34	1000	6900
3½	101.6	100.58	102.62	3.05	0.120	10	7.41	4.98	1200	8300
4	114.3	113.16	115.44	3.05	0.120	10	8.37	5.62	1200	8300
5	141.3	139.89	142.71	3.40	0.134	10	11.58	7.78	1200	8300
6	168.3	166.62	169.98	3.40	0.134	10	13.85	9.30	1000	6900
8	219.1	216.91	221.29	4.78	0.188	10	25.26	16.96	800	5500
10	273.0	270.27	275.73	4.78	0.188	10	31.62	21.23	700	4800

**Dimensions, Weights, Test Pressures For Standard-Weight Fire Protection Pipe—Schedule 40**

NPS DESIGNATOR	OUTSIDE DIAMETER	DIAMETER TOLERANCE		STANDARD THICKNESS		SCHEDULE	WEIGHT		TEST PRESSURE	
	(mm)	(Min)	(Max)	(mm)	(Inch)		(Kg/mtr)	(lb/ft)	(psi)	(kPa)
1/2	21.3	20.90	21.70	2.77	0.109	40	1.27	0.85	700	4800
3/4	26.7	26.30	27.10	2.87	0.113	40	1.69	1.13	700	4800
1	33.4	33.00	33.80	3.38	0.133	40	2.50	1.68	700	4800
1¼	42.2	41.80	42.60	3.56	0.140	40	3.39	2.27	1000	6900
1½	48.3	47.90	48.70	3.68	0.145	40	4.05	2.72	1000	6900
2	60.3	59.70	60.90	3.91	0.154	40	5.45	3.66	1000	6900
2½	73.0	72.27	73.73	5.16	0.203	40	8.64	5.80	1000	6900
3	88.9	88.01	89.79	5.49	0.216	40	11.29	7.58	1000	6900
3½	101.6	100.58	102.62	5.74	0.226	40	13.58	9.12	1200	8300
4	114.3	113.16	115.44	6.02	0.237	40	16.09	10.80	1200	8300
5	141.3	139.89	142.71	6.55	0.258	40	21.79	14.63	1200	8300
6	168.3	166.62	169.98	7.11	0.280	40	28.29	18.99	1200	8300

**Dimensions, Weights, Test Pressures For Standard-Weight Fire Protection Pipe—Schedule 30**

NPS DESIGNATOR	OUTSIDE DIAMETER	DIAMETER TOLERANCE		STANDARD THICKNESS		SCHEDULE	WEIGHT		TEST PRESSURE	
	(mm)	(Min)	(Max)	(mm)	(Inch)		(Kg/mtr)	(lb/ft)	(psi)	(kPa)
8	219.1	216.91	221.29	7.04	0.277	30	36.82	24.72	1200	8300
10	273.0	270.27	275.73	7.80	0.307	30	51.05	34.27	1000	6900

**CHEMICAL COMPOSITION**

GRADE	CHEMICAL COMPOSITION (Maximum)			
	C %	Mn %	P %	S %
A	0.250	0.950	0.035	0.035
B	0.300	1.200	0.035	0.035



## TECHNICAL DETAILS

Characteristics	Tolerances & Technical details
Outside Diameter	NPS 1 1/2 [DN 40] and under $\pm 0.016$ inch [0.41 mm] & NPS 2 [DN 50] and over $\pm 1\%$ of OD.
Thickness	-12.5% of specific wall thickness.
Weight	For each tube $\pm 5\%$ of standard weight.
Length	Pipe shall be furnished in single random lengths of 16 to 22 ft [4.9 to 6.7 m] or in uniform length as per the customer requirement.
Straightness	The finished pipe shall be reasonably straight.
Heat Treatment	The weld seam of pipe in Grade B shall be heat treated after welding to a minimum of 1000 °F [540 °C] so that no untempered martensite remains.
Flattening Test	Keep the weld at 0° or 90° from the line of direction of force and flatten upto 66% of OD, No cracks or breaks are allowed on the weld. Further flatten upto 33% of OD, No cracks or breaks are allowed in the material and during third step, Evidence of laminated or unsound material or of incomplete weld that is revealed during the entire flattening test shall be cause for rejection.
Hydro Test	Each length of pipe shall be tested by hydrostatic test without leakage through the pipe wall.
Nondestructive Test	Each length of pipe, size 2NPS (50DN) and larger shall be tested by non destructive electric test (Ultrasonic Test & Eddy-Current Test) in accordance with Practice E213 and Practice E309 as per customer requirements.
Mass of Zinc Coating	Average of two specimens 460 gm/mtr <sup>2</sup> & Individual specimen not less than 400 gm/mtr <sup>2</sup> .
Surface Protection	Black & Galvanized coating as per Customer requirement.
End	Pipe shall be finished with Square cut (plain End), Bevel End (30° -0/+5°), Roll Groove & Threading.
Threading	All threads shall be in accordance with the gauging practice and tolerances of ASME B1.20.1.
Marking (Stencilling)	" <small>PRAKASH</small> <b>SURYA</b> , Specification designation, Grade, Outside diameter, Thickness, Process of manufacturing & Heat No." on pipe and any thing specific as per customer requirement.



## TECHNICAL DATA OF PIPES CONFORMING TO ASTM A500

(Cold-formed welded carbon steel round, square & rectangular shape structural tubing for welded, riveted, or bolted construction of bridges and buildings, and for general structural purposes.)

SQUARE HOLLOW SECTIONS					SQUARE HOLLOW SECTIONS				
NOMINAL SIZE	WALL THICKNESS		WEIGHT		NOMINAL SIZE	WALL THICKNESS		WEIGHT	
(MM)	(MM)	(INCH)	(KG/MTR)	(KG/FT)	(MM)	(MM)	(INCH)	(KG/MTR)	(KG/FT)
19.0 X 19.0	1.50	0.059	0.779	0.238	60.0 X 60.0	4.80	0.189	7.854	2.395
19.0 X 19.0	1.80	0.071	0.907	0.277	60.0 X 60.0	5.00	0.197	8.130	2.479
19.0 X 19.0	2.00	0.079	0.987	0.301	75.0 X 75.0	2.00	0.079	4.504	1.373
25.0 X 25.0	1.50	0.059	1.061	0.323	75.0 X 75.0	2.60	0.102	5.770	1.759
25.0 X 25.0	1.60	0.063	1.124	0.343	75.0 X 75.0	2.80	0.110	6.189	1.887
25.0 X 25.0	1.80	0.071	1.246	0.380	75.0 X 75.0	3.00	0.118	6.601	2.013
25.0 X 25.0	2.00	0.079	1.364	0.416	75.0 X 75.0	3.80	0.150	8.204	2.501
25.0 X 25.0	2.60	0.102	1.692	0.516	75.0 X 75.0	4.00	0.157	8.594	2.620
25.0 X 25.0	3.00	0.118	1.891	0.577	75.0 X 75.0	4.80	0.189	10.115	3.084
30.0 X 30.0	1.50	0.059	1.297	0.395	75.0 X 75.0	5.00	0.197	10.485	3.197
30.0 X 30.0	1.80	0.071	1.528	0.466	80.0 X 80.0	2.60	0.102	6.182	1.885
30.0 X 30.0	2.00	0.079	1.678	0.512	80.0 X 80.0	2.80	0.110	6.629	2.021
30.0 X 30.0	2.60	0.102	2.100	0.640	80.0 X 80.0	3.00	0.118	7.072	2.156
30.0 X 30.0	3.00	0.118	2.630	0.802	80.0 X 80.0	3.80	0.150	8.800	2.683
38.0 X 38.0	1.50	0.059	1.674	0.510	80.0 X 80.0	4.00	0.157	9.222	2.812
38.0 X 38.0	1.80	0.071	1.981	0.604	80.0 X 80.0	4.80	0.189	10.869	3.314
38.0 X 38.0	2.00	0.079	2.180	0.665	80.0 X 80.0	5.00	0.197	11.270	3.436
38.0 X 38.0	2.60	0.102	2.753	0.839	80.0 X 80.0	5.50	0.217	12.255	3.736
38.0 X 38.0	3.00	0.118	3.115	0.950	90.0 X 90.0	2.60	0.102	6.999	2.134
38.0 X 38.0	3.80	0.150	3.789	1.155	90.0 X 90.0	2.80	0.110	7.508	2.289
38.0 X 38.0	4.00	0.157	3.947	1.203	90.0 X 90.0	3.00	0.118	8.014	2.443
40.0 X 40.0	1.50	0.059	1.768	0.539	90.0 X 90.0	3.80	0.150	9.994	3.047
40.0 X 40.0	1.80	0.071	2.094	0.638	90.0 X 90.0	4.00	0.157	10.478	3.195
40.0 X 40.0	2.00	0.079	2.306	0.703	90.0 X 90.0	4.80	0.189	12.376	3.773
40.0 X 40.0	2.80	0.110	3.112	0.949	90.0 X 90.0	5.00	0.197	12.840	3.915
40.0 X 40.0	3.00	0.118	3.304	1.007	90.0 X 90.0	5.50	0.217	13.982	4.263
50.0 X 50.0	1.50	0.059	2.239	0.683	100.0 X 100.0	2.60	0.102	7.815	2.383
50.0 X 50.0	1.80	0.071	2.659	0.811	100.0 X 100.0	2.80	0.110	8.387	2.557
50.0 X 50.0	2.00	0.079	2.934	0.895	100.0 X 100.0	3.00	0.118	8.956	2.730
50.0 X 50.0	2.60	0.102	3.733	1.138	100.0 X 100.0	3.80	0.150	11.187	3.411
50.0 X 50.0	2.80	0.110	3.991	1.217	100.0 X 100.0	4.00	0.157	11.734	3.577
50.0 X 50.0	3.00	0.118	4.246	1.295	100.0 X 100.0	4.80	0.189	13.883	4.233
50.0 X 50.0	3.80	0.150	5.221	1.592	100.0 X 100.0	5.00	0.197	14.410	4.393
50.0 X 50.0	4.00	0.157	5.454	1.663	100.0 X 100.0	5.50	0.217	15.709	4.789
50.0 X 50.0	4.80	0.189	6.347	1.935	125.0 x 125.0	4.50	0.177	16.620	5.067
50.0 X 50.0	5.00	0.197	6.560	2.000	125.0 x 125.0	5.00	0.197	18.330	5.588
60.0 X 60.0	2.00	0.079	3.562	1.086	125.0 x 125.0	6.00	0.236	21.690	6.613
60.0 X 60.0	2.60	0.102	4.550	1.387	132.0 x 132.0	4.80	0.189	18.710	5.704
60.0 X 60.0	2.80	0.110	4.871	1.485	132.0 x 132.0	5.40	0.213	20.880	6.366
60.0 X 60.0	3.00	0.118	5.188	1.582	132.0 x 132.0	6.00	0.236	23.010	7.015
60.0 X 60.0	3.80	0.150	6.414	1.955	150.0 x 150.0	5.00	0.197	22.260	6.787
60.0 X 60.0	4.00	0.157	6.710	2.046	150.0 x 150.0	6.00	0.236	26.400	8.049



**TECHNICAL DATA OF PIPES CONFORMING TO ASTM A500**

(Cold-formed welded carbon steel round, square & rectangular shape structural tubing for welded, riveted, or bolted construction of bridges and buildings, and for general structural purposes.)

RECTANGULAR HOLLOW SECTIONS					RECTANGULAR HOLLOW SECTIONS				
NOMINAL SIZE	WALL THICKNESS		WEIGHT		NOMINAL SIZE	WALL THICKNESS		WEIGHT	
	(MM)	(MM) (INCH)	(KG/MTR)	(KG/FT)		(MM)	(MM) (INCH)	(KG/MTR)	(KG/FT)
40.0 X 50.0	1.50	0.059	1.297	0.395	100.0 X 50.0	5.00	0.197	10.485	3.197
40.0 X 50.0	1.80	0.071	1.528	0.466	100.0 X 50.0	5.50	0.217	11.391	3.473
40.0 X 50.0	2.00	0.079	1.678	0.512	100.0 X 75.0	2.60	0.102	6.795	2.072
40.0 X 50.0	2.60	0.102	2.100	0.640	100.0 X 75.0	2.80	0.110	7.288	2.222
40.0 X 50.0	2.80	0.110	2.233	0.681	100.0 X 75.0	3.00	0.118	7.778	2.371
40.0 X 50.0	3.00	0.118	2.362	0.720	100.0 X 75.0	3.80	0.150	9.695	2.956
50.0 X 25.0	1.50	0.059	1.650	0.503	100.0 X 75.0	4.00	0.157	10.164	3.099
50.0 X 25.0	1.80	0.071	1.952	0.595	100.0 X 75.0	4.80	0.189	11.999	3.658
50.0 X 25.0	2.00	0.079	2.149	0.655	100.0 X 75.0	5.00	0.197	12.447	3.795
50.0 X 25.0	2.60	0.102	2.713	0.827	100.0 X 75.0	5.50	0.217	12.550	3.826
50.0 X 25.0	2.80	0.110	2.892	0.882	<b>ROUND HOLLOW TUBES</b>				
50.0 X 25.0	3.00	0.118	3.068	0.935	(MM) (INCH)	(MM) (INCH)	(KG/MTR)	(KG/FT)	
60.0 X 30.0	1.50	0.059	2.003	0.611	21.3 ¾	2.77	0.109	1.270	0.387
60.0 X 30.0	1.80	0.071	2.376	0.724	26.7 ¾	2.87	0.113	1.690	0.515
60.0 X 30.0	2.00	0.079	2.620	0.799	33.4 1	3.38	0.133	2.500	0.762
60.0 X 30.0	2.60	0.102	3.325	1.014	42.2 1¼	3.56	0.140	3.390	1.034
60.0 X 30.0	2.80	0.110	3.552	1.083	48.3 1½	3.68	0.145	4.050	1.235
60.0 X 30.0	3.00	0.118	3.775	1.151	60.3 2	3.91	0.154	5.440	1.659
60.0 X 40.0	1.50	0.059	2.775	0.846	73.0 2½	5.16	0.203	8.630	2.631
60.0 X 40.0	2.00	0.079	2.934	0.895	88.9 3	5.49	0.216	11.290	3.442
60.0 X 40.0	2.60	0.102	3.733	1.138	114.3 4	6.02	0.237	16.070	4.899
60.0 X 40.0	2.80	0.110	3.991	1.217	141.3 5	6.55	0.258	21.770	6.637
60.0 X 40.0	3.00	0.118	4.246	1.295	168.3 6	7.11	0.280	28.260	8.616
60.0 X 40.0	3.80	0.150	5.221	1.592	219.1 8	6.35	0.250	33.310	10.155
60.0 X 40.0	4.00	0.157	5.454	1.663	219.1 8	7.04	0.277	36.310	11.070
80.0 X 40.0	1.50	0.059	2.710	0.826	219.1 8	8.18	0.322	42.550	12.973
80.0 X 40.0	1.80	0.071	3.224	0.983	273.0 10	6.35	0.250	41.750	12.729
80.0 X 40.0	2.00	0.079	3.562	1.086	273.0 10	7.80	0.307	51.010	15.552
80.0 X 40.0	2.60	0.102	4.550	1.387	273.0 10	9.27	0.365	60.290	18.381
80.0 X 40.0	2.80	0.110	4.871	1.485	273.0 10	12.70	0.500	81.520	24.854
80.0 X 40.0	3.00	0.118	5.188	1.582	323.8 12	6.35	0.250	49.710	15.155
80.0 X 40.0	3.80	0.150	6.414	1.955	323.8 12	8.38	0.330	65.180	19.872
80.0 X 40.0	4.00	0.157	6.710	2.046	323.8 12	9.52	0.375	73.780	22.494
80.0 X 40.0	4.80	0.189	7.854	2.395	323.8 12	10.31	0.406	79.700	24.299
80.0 X 40.0	5.00	0.197	8.130	2.479	323.8 12	12.70	0.500	97.430	29.704
100.0 X 50.0	2.00	0.079	4.504	1.373	355.6 14	6.35	0.250	54.690	16.674
100.0 X 50.0	2.60	0.102	5.774	1.760	355.6 14	7.92	0.312	67.900	20.701
100.0 X 50.0	2.80	0.110	6.189	1.887	355.6 14	9.52	0.375	81.250	24.771
100.0 X 50.0	3.00	0.118	6.601	2.013	355.6 14	11.13	0.438	94.550	28.826
100.0 X 50.0	3.80	0.150	8.204	2.501	355.6 14	12.70	0.500	107.390	32.741
100.0 X 50.0	4.00	0.157	8.594	2.620	406.4 16	6.35	0.250	62.640	19.098
100.0 X 50.0	4.80	0.189	10.552	3.217	406.4 16	7.92	0.312	77.830	23.729
					406.4 16	9.52	0.375	93.170	28.405
					406.4 16	12.70	0.500	123.300	37.591

### Chemical Compositions (%)

Elements	Grade A & B		Grade C	
	Heat Analysis	Product Analysis	Heat Analysis	Product Analysis
Carbon (Maximum) <sup>A</sup>	0.260	0.300	0.230	0.270
Manganese (Maximum)	1.350	1.400	1.350	1.400
Phosphorus (Maximum)	0.035	0.045	0.035	0.045
Sulfur (Maximum)	0.035	0.045	0.035	0.045
Copper (Minimum)	0.200	0.180	0.200	0.180

<sup>A</sup>For each reduction of 0.01 percentage point below the specified maximum for carbon, an increase of 0.06 percentage point above the specified maximum for manganese is permitted, up to a maximum of 1.50 % by heat analysis and 1.60 % by product analysis.

### Mechanical Properties


#### Round Structural Tubing

	Grade A	Grade B	Grade C
Tensile Strength (Mpa) minimum	310	400	425
Yield Strength (Mpa) minimum	230	290	315
%Elongation in (50mm) minimum	25	23	21

#### Shaped Structural Tubing

	Grade A	Grade B	Grade C
Tensile Strength (Mpa) minimum	310	400	425
Yield Strength (Mpa) minimum	270	315	345
%Elongation in (50mm) minimum	25	23	21

## TECHNICAL DETAILS

Characteristics	Tolerances & Technical details
Outside Diameter (OD)	For Round Pipes, OD 1.90 Inch (48.3mm) and smaller $\pm 0.50$ % & OD 2.00 Inch (60.3mm) and larger $\pm 0.75$ % For Square & Rectangular Section 2½ Inch [65mm] or under $\pm 0.020$ Inch (0.50 mm) Over 2½ to 3½ [65mm to 90mm] $\pm 0.025$ Inch (0.60 mm) Over 3½ to 5½ [90mm to 140mm] $\pm 0.030$ Inch (0.80 mm) Over 5½ [140mm] $\pm 1.0$ % of OD
Thickness	$\pm 10$ % of specific wall thickness.
Length	Pipe shall be furnished in single random length, double random length or in uniform length as per the customer requirement.
Straightness	2 mm/mtr
Squareness (Square & rectangular)	90° $\pm 2'$ max.
Radius	3 times of thickness maximum
Twist	For Square & Rectangular Section 1½ Inch [40mm] and under = 0.050 Inch [1.3mm] Over 1½ to 2½ Inch [40mm to 65mm] = 0.062 Inch [1.6mm] Over 2½ to 4 Inch [65mm to 100mm] = 0.075 Inch [1.9mm] Over 4 to 6 Inch [100mm to 150mm] = 0.087 Inch [2.2mm] Over 6 to 8 Inch [150mm to 200mm] = 0.100 Inch [2.5mm] Over 8 Inch [200mm] = 0.112 Inch [2.8mm]
Flattening Test	Keep the weld at 90° and flatten upto 66% of OD, No cracks or breaks are allowed on the weld. Further flatten upto 50% of OD, No cracks or breaks are allowed in the material and during third step full flatten for soundness or lamination.
Surface Protection	Black & Galvanized coating as per Customer requirement.
Marking (Stencilling)	"  SURYA, Specification designation and Grade" on pipe and any thing specific as per customer requirement.



**TECHNICAL DATA OF PIPES CONFORMING TO API 5L- (Latest Edition)**

Size	Outside Diameter		Wall Thickness		Mass of Plain end Pipe		Standard Test Pressure								
							GrA	GrB	GrX42	GrX46	GrX52	GrX56	GrX60	GrX65	GrX70
	mm	inch	mm	inch	Kg/Mtr.	Lb/Ft.	MPa	MPa	MPa	MPa	MPa	MPa	MPa	MPa	
3½	88.9	3.500	2.10	0.083	4.50	3.03	6.0	7.0	8.2	9.1	10.2	11.1	11.8	12.8	13.7
	88.9		2.80	0.109	5.95	3.95	8.0	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	88.9		3.20	0.125	6.76	4.51	9.1	10.6	12.5	13.8	15.6	16.8	17.9	19.4	20.9
	88.9		3.60	0.141	7.57	5.06	10.2	11.9	14.1	15.6	17.5	19.0	20.2	21.9	23.6
	88.9		4.00	0.156	8.37	5.58	11.3	13.2	15.7	17.3	19.4	21.1	22.4	24.3	26.2
	88.9		4.40	0.172	9.17	6.12	12.5	14.6	17.2	19.0	21.4	23.2	24.6	26.7	28.8
	88.9		4.80	0.188	9.95	6.66	13.6	15.9	18.8	20.7	23.3	25.3	26.9	29.2	31.4
	88.9		5.50	0.216	11.31	7.58	15.6	18.2	21.5	23.8	26.7	29.0	30.8	33.4	36.0
4	101.6	4.000	2.10	0.083	5.15	3.48	5.2	6.1	7.2	7.9	8.9	9.7	10.3	11.2	12.0
	101.6		2.80	0.109	6.82	4.53	6.9	8.1	9.6	10.6	11.9	12.9	13.7	14.9	16.0
	101.6		3.20	0.125	7.76	5.18	7.9	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	101.6		3.60	0.141	8.70	5.82	8.9	10.4	12.3	13.6	15.3	16.6	17.6	19.1	20.6
	101.6		4.00	0.156	9.63	6.41	9.9	11.6	13.7	15.1	17.0	18.4	19.6	21.3	22.9
	101.6		4.40	0.172	10.55	7.04	10.9	12.7	15.1	16.6	18.7	20.3	21.6	23.4	25.2
	101.6		4.80	0.188	11.46	7.66	11.9	13.9	16.4	18.1	20.4	22.1	23.5	25.5	27.5
	101.6		5.70	0.226	13.48	9.12	14.1	16.5	19.5	21.5	24.2	26.3	27.9	30.3	32.7
4½	114.3	4.500	2.10	0.083	5.81	3.92	4.6	5.4	6.4	7.1	7.9	8.6	9.1	9.9	10.7
	114.3		3.20	0.125	8.77	5.85	7.1	8.2	9.7	10.8	12.1	13.1	13.9	15.1	16.3
	114.3		3.60	0.141	9.83	6.57	7.9	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	114.3		4.00	0.156	10.88	7.24	8.8	10.3	12.2	13.4	15.1	16.4	17.4	18.9	20.4
	114.3		4.40	0.172	11.92	7.96	9.7	11.3	13.4	14.8	16.6	18.0	19.2	20.8	22.4
	114.3		4.80	0.188	12.96	8.67	10.6	12.3	14.6	16.1	18.1	19.7	20.9	22.7	24.4
	114.3		5.20	0.203	13.99	9.32	11.5	13.4	15.8	17.5	19.7	21.3	22.7	24.6	26.5
	114.3		5.60	0.219	15.01	10.02	12.3	14.4	17.0	18.8	21.2	22.9	24.4	26.5	28.5
	114.3		6.00	0.237	16.02	10.80	13.2	15.4	18.3	20.2	22.7	24.6	26.1	28.3	30.6
	114.3		6.40	0.250	17.03	11.36	14.1	16.5	19.5	21.5	24.2	26.2	27.9	30.2	32.6
	114.3		7.10	0.280	18.77	12.59	15.7	18.3	21.6	23.9	26.8	29.1	30.9	33.5	36.2
	5-9/16		141.3	5.563	2.10	0.083	7.21	4.86	3.7	4.4	5.2	5.7	6.4	7.0	7.4
141.3		3.20	0.125		10.90	7.27	5.7	6.7	7.9	8.7	9.8	10.6	11.3	12.2	13.2
141.3		4.00	0.156		13.54	9.02	7.1	8.3	9.9	10.9	12.2	13.2	14.1	15.3	16.5
141.3		4.80	0.188		16.16	10.80	8.6	10.0	11.8	13.0	14.7	15.9	16.9	18.3	19.8
141.3		5.60	0.219		18.74	12.51	10.0	11.7	13.8	15.2	17.1	18.5	19.7	21.4	23.1
141.3		6.60	0.258		21.92	14.63	11.8	13.7	16.3	17.9	20.2	21.9	23.3	25.2	27.2
6-5/8	168.3	6.625	2.10	0.083	8.61	5.80	3.1	4.6	5.4	6.0	6.7	7.3	7.8	8.4	9.1
	168.3		2.80	0.109	11.43	7.59	4.2	6.1	7.2	8.0	9.0	9.7	10.4	11.2	12.1
	168.3		3.20	0.125	13.03	8.69	4.8	7.0	8.3	9.1	10.3	11.1	11.8	12.8	13.8
	168.3		3.60	0.141	14.62	9.77	5.4	7.9	9.3	10.3	11.6	12.5	13.3	14.4	15.6
	168.3		4.00	0.156	16.21	10.79	6.0	8.7	10.3	11.4	12.8	13.9	14.8	16.0	17.3
	168.3		4.40	0.172	17.78	11.87	6.6	9.6	11.4	12.5	14.1	15.3	16.3	17.6	19.0
	168.3		4.80	0.188	19.35	12.94	7.2	10.5	12.4	13.7	15.4	16.7	17.8	19.3	20.7
	168.3		5.20	0.203	20.91	13.94	7.8	11.4	13.4	14.8	16.7	18.1	19.2	20.9	22.5
	168.3		5.60	0.219	22.47	15.00	8.4	12.2	14.5	16.0	18.0	19.5	20.7	22.5	24.2
	168.3		6.40	0.250	25.55	17.04	9.6	14.0	16.5	18.3	20.5	22.2	23.7	25.7	27.7
	168.3		7.10	0.280	28.22	18.99	10.6	15.5	18.4	20.2	22.8	24.7	26.3	28.5	30.7
	168.3		7.90	0.312	31.25	21.06	11.8	17.3	20.4	22.5	25.3	27.5	29.2	31.7	34.1
	168.3		8.70	0.344	34.24	23.10	13.0	19.0	22.5	24.8	27.9	30.2	32.2	34.9	37.6
	8-5/8		219.1	8.625	3.20	0.125	17.04	11.36	3.7	5.4	6.4	7.0	7.9	8.5	9.1
219.1		4.00	0.156		21.22	14.12	4.6	6.7	7.9	8.8	9.9	10.7	11.4	12.3	13.3
219.1		4.80	0.188		25.37	16.96	5.5	8.1	9.5	10.5	11.8	12.8	13.6	14.8	15.9
219.1		5.20	0.203		27.43	18.28	6.0	8.7	10.3	11.4	12.8	13.9	14.8	16.0	17.3
219.1		5.60	0.219		29.48	19.68	6.4	9.4	11.1	12.3	13.8	15.0	15.9	17.3	18.6
219.1		6.40	0.250		33.57	22.38	7.4	10.7	12.7	14.0	15.8	17.1	18.2	19.7	21.3
219.1		7.00	0.277		36.61	24.72	8.1	11.7	13.9	15.3	17.3	18.7	19.9	21.6	23.2
219.1		7.90	0.312		41.14	27.73	9.1	13.3	15.7	17.3	19.5	21.1	22.4	24.3	26.2
219.1		8.20	0.322		42.65	28.58	9.4	13.8	16.3	18.0	20.2	21.9	23.3	25.3	27.2
219.1		8.70	0.344		45.14	30.45	10.0	14.6	17.3	19.1	21.4	23.2	24.7	26.8	28.9
219.1		9.50	0.375		49.10	33.07	10.9	15.9	18.9	20.8	23.4	25.4	27.0	29.3	31.5
10%		273.1	10.750		4.00	0.156	26.54	17.67	5.2	6.1	7.2	8.0	9.0	9.7	10.3
	273.1	4.80		0.188	31.76	21.23	6.3	7.3	8.7	9.6	10.8	11.7	12.4	13.4	14.5
	273.1	5.20		0.203	34.35	22.89	6.8	7.9	9.4	10.4	11.7	12.6	13.4	14.6	15.7
	273.1	5.60		0.219	36.94	24.65	7.3	8.5	10.1	11.2	12.5	13.6	14.5	15.7	16.9
	273.1	6.40		0.250	42.09	28.06	8.4	9.8	11.6	12.7	14.3	15.5	16.5	17.9	19.3
	273.1	7.10		0.279	46.57	31.23	9.3	10.8	12.8	14.1	15.9	17.2	18.3	19.9	21.4
	273.1	7.80		0.307	51.03	34.27	10.2	11.9	14.1	15.5	17.5	18.9	20.1	21.8	23.5
	273.1	8.70		0.344	56.72	38.27	11.4	13.3	15.7	17.3	19.5	21.1	22.5	24.4	26.3
	273.1	9.30		0.365	60.50	40.52	12.2	14.2	16.8	18.5	20.8	22.6	24.0	26.1	28.1
	273.1	11.10		0.438	71.72	48.28	14.5	16.9	20.0	22.1	24.9	26.9	28.7	31.1	33.5



**TECHNICAL DATA OF PIPES CONFORMING TO API 5L- (Latest Edition)**

12½	323.9	12.750	4.40	0.172	34.67	23.13	4.8	5.7	6.7	7.4	8.3	9.0	9.6	10.4	11.2
	323.9		4.80	0.188	37.77	25.25	5.3	6.2	7.3	8.1	9.1	9.8	10.5	11.3	12.2
	323.9		5.20	0.203	40.87	27.23	5.7	6.7	7.9	8.7	9.8	10.6	11.3	12.3	13.2
	323.9		5.60	0.219	43.96	29.34	6.2	7.2	8.5	9.4	10.6	11.5	12.2	13.2	14.3
	323.9		6.40	0.250	50.11	33.41	7.1	8.2	9.7	10.7	12.1	13.1	13.9	15.1	16.3
	323.9		7.10	0.281	55.47	37.46	7.8	9.1	10.8	11.9	13.4	14.5	15.5	16.8	18.1
	323.9		7.90	0.312	61.56	41.48	8.7	10.2	12.0	13.3	14.9	16.2	17.2	18.7	20.1
	323.9		8.40	0.330	65.35	43.81	9.3	10.8	12.8	14.1	15.9	17.2	18.3	19.8	21.4
	323.9		8.70	0.344	67.62	45.62	9.6	11.2	13.2	14.6	16.4	17.8	18.9	20.5	22.1
	323.9		9.50	0.375	73.65	49.61	10.5	12.2	14.5	16.0	17.9	19.4	20.7	22.4	24.2
	323.9		10.30	0.406	79.65	53.57	11.4	13.2	15.7	17.3	19.5	21.1	22.4	24.3	26.2
	323.9		11.10	0.438	85.62	57.65	12.2	14.3	16.9	18.6	21.0	22.7	24.2	26.2	28.3
14	355.6	14.000	4.80	0.188	41.52	27.76	4.8	5.6	6.7	7.3	8.3	8.9	9.5	10.3	11.1
	355.6		5.20	0.203	44.93	29.94	5.2	6.1	7.2	8.0	8.9	9.7	10.3	11.2	12.1
	355.6		5.30	0.210	45.78	30.96	5.3	6.2	7.3	8.1	9.1	9.9	10.5	11.4	12.3
	355.6		5.60	0.219	48.33	32.26	5.6	6.6	7.8	8.6	9.6	10.4	11.1	12.0	13.0
	355.6		6.40	0.250	55.11	36.75	6.4	7.5	8.9	9.8	11.0	11.9	12.7	13.8	14.8
	355.6		7.10	0.281	61.02	41.21	7.1	8.3	9.8	10.9	12.2	13.2	14.1	15.3	16.5
	355.6		7.90	0.312	67.74	45.65	7.9	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	355.6		8.70	0.344	74.42	50.22	8.7	10.2	12.1	13.3	15.0	16.2	17.3	18.7	20.2
	355.6		9.50	0.375	81.08	54.62	9.5	11.1	13.2	14.5	16.3	17.7	18.8	20.4	22.0
	355.6		10.30	0.406	87.71	59.00	10.3	12.1	14.3	15.8	17.7	19.2	20.4	22.2	23.9
	355.6		11.10	0.438	94.30	63.50	11.1	13.0	15.4	17.0	19.1	20.7	22.0	23.9	25.7
	16		406.4	16.000	4.80	0.188	47.54	31.78	4.2	4.9	5.8	6.4	7.2	7.8	8.3
406.4		5.20	0.203		51.45	34.28	4.6	5.3	6.3	7.0	7.8	8.5	9.0	9.8	10.5
406.4		5.60	0.219		55.35	36.95	4.9	5.7	6.8	7.5	8.4	9.1	9.7	10.5	11.4
406.4		6.40	0.250		63.13	42.09	5.6	6.6	7.8	8.6	9.6	10.4	11.1	12.0	13.0
406.4		7.10	0.281		69.91	47.22	6.2	7.3	8.6	9.5	10.7	11.6	12.3	13.4	14.4
406.4		7.90	0.312		77.63	52.32	6.9	8.1	9.6	10.6	11.9	12.9	13.7	14.9	16.0
406.4		8.70	0.344		85.32	57.57	7.6	8.9	10.6	11.6	13.1	14.2	15.1	16.4	17.7
406.4		9.50	0.375		92.98	62.64	8.3	9.7	11.5	12.7	14.3	15.5	16.5	17.9	19.3
406.4		10.30	0.406		100.61	67.68	9.0	10.6	12.5	13.8	15.5	16.8	17.9	19.4	20.9
406.4		11.10	0.438		108.2	72.86	9.8	11.4	13.5	14.9	16.7	18.1	19.3	20.9	22.5

**Tolerances :-**

**1) Outside diameter of Body & Ends :**

Specified OD (mm)	Body Tolerance	Ends Tolerance (mm)	Out-of-roundness tolerances (mm)	
			Pipe except the end	Pipe end
≥ 88.9 to 168.3	±0.0075 D	-0.40, +1.60	0.020 D	0.015 D
>168.3 to 610	±0.0075 D but max. of ±3.20 mm	±0.005 D, but max. of ±1.60 mm	0.020 D	0.015 D
> 610 to 1422	±0.005 D but max. of ±4.0 mm	±1.60 mm	0.015 D	0.010 D
>1422	As agreed			

**2) Thickness :**

≤5.0 mm = ±0.5 mm  
 >5.0 to <15.0 = ±0.1t  
 ≥15.0 mm = ± 1.5 mm  
 (where t = wall thickness)

**3) Mass :**

+10%, -3½% of standard weight

**Mechanical properties :**

PSL 1	Gr.A	Gr.B	Gr.X42	Gr.X46	Gr.X52	Gr.X56	Gr.X60	Gr.X65	Gr.X70
Yield strength MPa (min.)	210	245	290	320	360	390	415	450	485
Tensile strength MPa (min.)	335	415	415	435	460	490	520	535	570
Elongation (% Min.)	Min. elong. Shall be determined by $A_r = 1940 \frac{U}{\sqrt{A}}$ (Where A=Area of test specimen, U=Min. specified tensile strength)								

PSL 2	Gr.AM	Gr.BM	Gr.X42M	Gr.X46M	Gr.X52M	Gr.X56M	Gr.X60M	Gr.X65M	Gr.X70M
Yield strength MPa (min.)	-	245-450e	290-495	320-525	360-530	390-545	415-565	450-600	485-635
Tensile strength MPa (min.)	-	415-655	415-655	435-655	460-760	490-760	520-760	535-760	570-760
Elongation (% Min.)	Min. elong. Shall be determined by $A_r = 1940 \frac{U}{\sqrt{A}}$ (Where A=Area of test specimen, U=Min. specified tensile strength)								
Ratio (YS/TS) Max.	0.93								

e = For pipe with D<219.1 mm, the maximum yield strength shall be ≤495 MPa



# TECHNICAL DATA OF PIPE CONFORMING TO API 5L

## CHEMICAL COMPOSITION FOR PSL 1 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	*Mass fraction based upon heat and product analysis %			
	C max	Mn max	P max	S max
L 210 or Grade A	0.22	0.90	0.030	0.030
L 245 or Grade B	0.26	1.20	0.030	0.030
L 290 or X 42	0.26	1.30	0.030	0.030
L 320 or X 46	0.26	1.40	0.030	0.030
L 360 or X 52	0.26	1.40	0.030	0.030
L 390 or X 56	0.26	1.40	0.030	0.030
L 415 or X 60	0.26	1.40	0.030	0.030
L 450 or X 65	0.26	1.45	0.030	0.030
L 485 or X 70	0.26	1.65	0.030	0.030

\*Other requirements as per API 5L

## CHEMICAL COMPOSITION FOR PSL 2 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	Mass fraction based upon heat and product analysis % maximum								Carbon Equivalent (% Maximum)	
	C	Si	Mn	P	S	V	Nb	Ti	CE (IIW)	CE (PCM)
L 245M or Grade BM	0.22	0.45	1.20	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 290M or X 42M	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 320M or X 46M	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 360M or X 52M	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 390M or X 56M	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 415M or X 60M	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 450M or X 65M	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 485M or X 70M	0.12	0.45	1.70	0.025	0.015	*	*	*	0.43	0.25
L 555M or X 80M	0.12	0.45	1.85	0.025	0.015	*	*	*	0.43	0.25

\*This is as per API Specification 5L

### Destructive & Non-Destructive Testing

**Mechanical Testing** Mechanical testing shall be done as API 5L

**Hydrostatic Testing** 100% of pipe shall be tested at a pressure specified in API 5L

#### NDT

Weld seam of each pipe shall be tested by online Eddy Current Test

PSL-1 Pipe body and weld seam shall be tested by Ultrasonic Test (after hydro test)

PSL-2

For pipes over size 2.375"

#### Flattening (0° & 90°)

1. Flatten upto 1/2 of OD (no crack in weld) 2. Flatten upto 1/3 of OD (no cracks or breaks other than in weld)

3. Full Flattening ( no Lamination or burnt metal)

**Reverse Bend Test** Customer Specification to determine strength of weld

#### Metallography

For Grain size and Grain Structure

#### Impact Testing

For PSL-2 Pipes only (at 0°C) Min value for one sample = 22 J, Min Avg. value of 3 samples = 27 J or as per API 5L

# SPIRAL WELDED PIPES

## GROWTH PROSPECTS OF SPIRAL PIPES

### OIL PIPE LINES

Oil Refinery Piping, Crude Oil Piping, Cross Country Pipe Line.

### WATER PIPE LINES

Water Mains, Sewerage Systems, Industrial Water Lines, Plant Piping.

### STRUCTURAL

Piping pile foundation for high rise buildings, Well casing.

### CHEMICAL INDUSTRIES

Conveying of Chemicals

### GAS PIPE LINES

Pipe Lines for Natural Gas, LPG







## SPIRAL WELDED PIPE PLANT

The plant situated in an area of about 100 acres and located on the National Highway at Bhuvad village (Anjar) in Kutch district of Gujarat State producing Spiral Welded Pipes in the range from 18" to 105" with maximum wall thickness of 1" (25.4mm). The pipes are produced to meet high standards of specifications both, national and international, including that of API(American Petroleum Institute), conforming to API/ASTM specifications up to Spec.5L, Gr.X80. This plant has extended capacity of 2,00,000 MT per annum.

All the machines for manufacturing of Spiral Welded Pipes are imported from Byard Malaysia and Germany, who are world class manufacturers of Spiral Pipe Plant machinery. It is taking advantage of the strategic location in close proximity to the ports at Kandla (22km) and Mundra (35km) that have facilities for handling heavy cargo.







## FOCUS ON QUALITY

Customer satisfaction drives Surya in everything that it does. No wonder, its commitment to the high quality of its pipes commences right from the selection of raw material and continues at every stage of manufacturing process till the finished product.

## MODERN LABORATORY

To ensure product reliability through process control, Surya has a fully equipped mechanical, Chemical and metallurgical laboratory with all the tools essential for comprehensive product quality testing and evaluation to withstand reactive processes. Hydro testing of pipes is undertaken to detect leaks and fissures. Destructive testing of pipes entails performance examination of the weld, as well as their tensile and compressive strength.

# TESTING AND QUALITY CONTROL FACILITIES

Besides the numerous quality assurance measures during the manufacturing process and at various inspection points, the following facilities are also utilized for ensuring stringent quality standards.



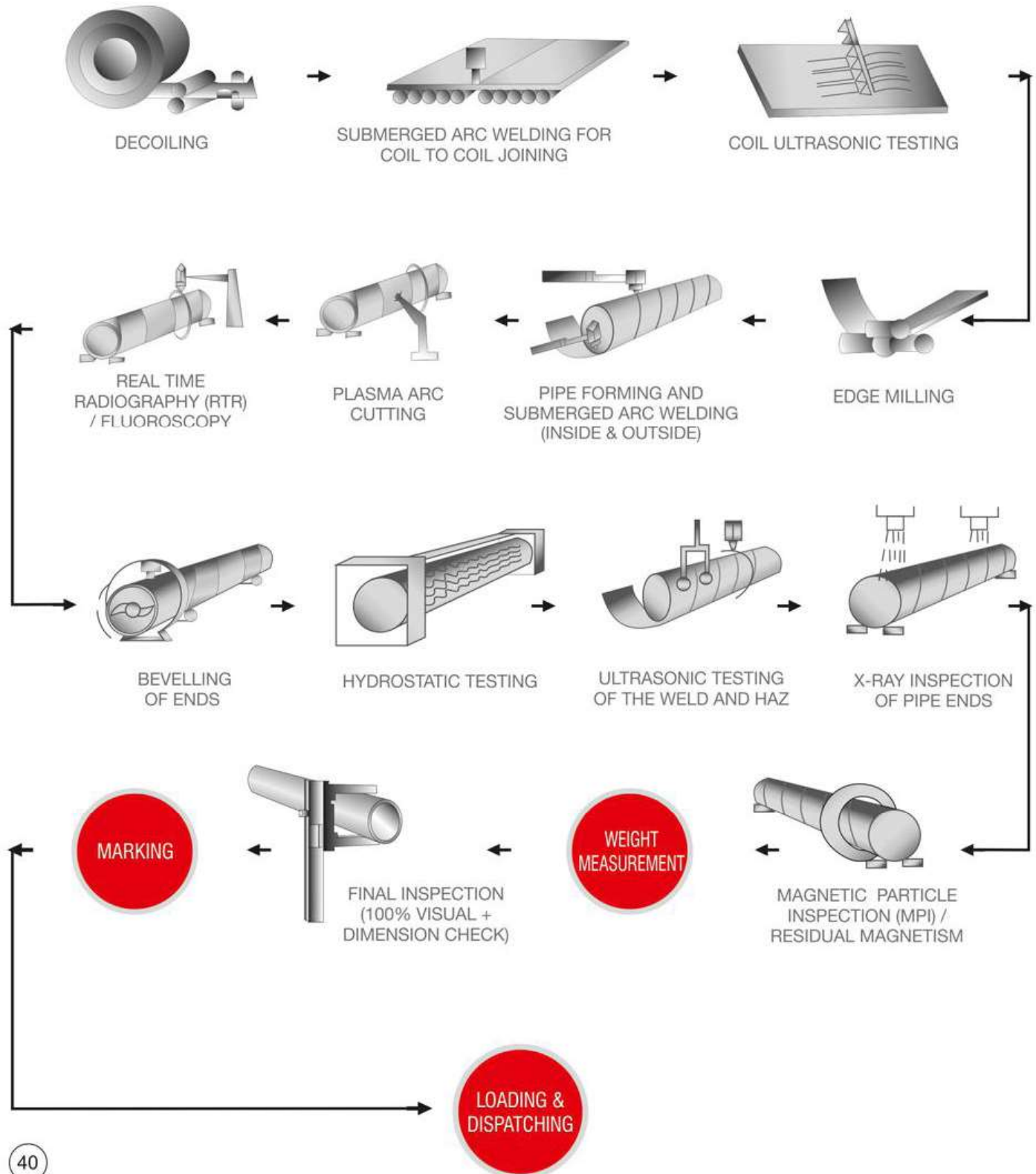
• Universal Testing Machines (Digital)	For material testing (mechanical properties)
• Ultrasonic Testing Machine (NDT) (Parent Metal / Welds )	For checking strip laminations and flaw detection on welds on pipes in auto mode
• Metallurgical Microscope	For checking and evaluating the grain size & grain structure of material, heat affected and weld zones
• Vickers Hardness Tester (Digital)	For checking micro & macro hardness on weld, heat affected zone and base metal
• Digital Ultrasonic Thickness Gauge	For checking thickness of pipes
• Mandrels and Fixtures	Guided bend test (GBT)
• Impact Test Machine (Charpy v notch)	For Evaluating toughness in base metal, weld and HAZ of pipes
• Drop weight tear test	For evaluating the % shear area of material for Ductility
• Spectroscope	For checking chemical composition of raw material & product

Apart from the above important testing machines, we have digital temperature recorders for measuring welding temperature, auto pressure recorder for measuring hydraulic test pressure and many other sophisticated measuring instruments.

The trained and committed work force ensures high quality of pipes made to various national and international standards, including the requirement of API specifications. The quality control system is audited time to time by the various certification bodies including API to verify the effectiveness of the system.



# FLOW CHART: SAWH



# Product Profile : SAWH Pipes

Outside Diameter	Thickness	Capacity (MT per annum)	Length	Grade	Pipe Ends
18" (457 mm) to 105" (2667mm)	5 mm to 25 mm	2,00,000 (0.2 Million)	Upto 13000 mm	API 5L GR upto X80, ASTM A 252, ASTM A 139, IS 3589, IS 5504.	Plain / Bevelled



ISO 9001:2015  
70121-2010-AQ-IND-RvA  
ISO 14001:2015  
177047-2015-AE-IND-RvA  
OHSAS 18001:2007  
177048-2015-HSO-IND-DNV



API 5L : 0794



API 5CT : 1378



# TECHNICAL DATA OF PIPE CONFORMING TO API 5L

## CHEMICAL COMPOSITION FOR PSL 1 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	*Mass fraction based upon heat and product analysis %			
	C max	Mn max	P max	S max
L 210 or Grade A	0.22	0.90	0.030	0.030
L 245 or Grade B	0.26	1.20	0.030	0.030
L 290 or X 42	0.26	1.30	0.030	0.030
L 320 or X 46	0.26	1.40	0.030	0.030
L 360 or X 52	0.26	1.40	0.030	0.030
L 390 or X 56	0.26	1.40	0.030	0.030
L 415 or X 60	0.26	1.40	0.030	0.030
L 450 or X 65	0.26	1.45	0.030	0.030
L 485 or X 70	0.26	1.65	0.030	0.030

\*Other requirements as per API 5L

## PIPE TENSILE TEST REQUIREMENT FOR PSL 1 WELDED PIPES ( Delivery Condition - R, N & M)

Pipe Grade	Yield Strength (Y.S.) MPa (psi) Minimum	Tensile Strength MPa (psi) Minimum
L 210 or Grade A	210 (30500)	335 (48600)
L 245 or Grade B	245 (35500)	415 (60200)
L 290 or X 42	290 (42100)	415 (60200)
L 320 or X 46	320 (46400)	435 (63100)
L 360 or X 52	360 (52200)	460 (66700)
L 390 or X 56	390 (56600)	490 (71100)
L 415 or X 60	415 (60200)	520 (75400)
L 450 or X 65	450 (65300)	535 (77600)
L 485 or X 70	485 (70300)	570 (82700)

# TECHNICAL DATA OF PIPE CONFORMING TO API 5L

## CHEMICAL COMPOSITION FOR PSL 2 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	Mass fraction based upon heat and product analysis % maximum								Carbon Equivalent (% Maximum)	
	C	Si	Mn	P	S	V	Nb	Ti	CE (IIW)	CE (PCM)
L 245 or Grade B	0.22	0.45	1.20	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 290 or X 42	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 320 or X 46	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 360 or X 52	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 390 or X 56	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 415 or X 60	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 450 or X 65	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 485 or X 70	0.12	0.45	1.70	0.025	0.015	*	*	*	0.43	0.25
L 555 or X 80	0.12	0.45	1.85	0.025	0.015	*	*	*	0.43	0.25

\*This is as per API Specification 5L

## PIPE TENSILE TEST REQUIREMENT FOR PSL 2 WELDED PIPES ( Delivery Condition - N & M)

Pipe Grade	Yield Strength (Y.S.) MPa (psi)		Tensile Strength MPa (psi)		Ratio (YS/UTS)
	Minimum	Maximum	Minimum	Maximum	Maximum
L 245M or Grade BM	245 (35500)	450 (65300)	415 (60200)	655 (95000)	0.93
L 290M or X 42M	290 (42100)	495 (71800)	415 (60200)	655 (95000)	0.93
L 320M or X 46M	320 (46400)	525 (76100)	435 (63100)	655 (95000)	0.93
L 360M or X 52M	360 (52200)	530 (76900)	460 (66700)	760 (110200)	0.93
L 390M or X 56M	390 (56600)	545 (79000)	490 (71100)	760 (110200)	0.93
L 415M or X 60M	415 (60200)	565 (81900)	520 (75400)	760 (110200)	0.93
L 450M or X 65M	450 (65300)	600 (87000)	535 (77600)	760 (110200)	0.93
L 485M or X 70M	485 (70300)	635 (92100)	570 (82700)	760 (110200)	0.93
L 555M or X 80M	555 (80500)	705 (102300)	625 (90600)	825 (119700)	0.93





■ These are used for casing and tubing application in Oil & Gas industry.

■ Electric Resistance Welded Tubing & Casing manufactured by SURYA, fully comply with API 5CT requirement .

■ Product Standard / Material Quality – API 5CT – H40,J55,K 55 PSL 1



# OCTG

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## OIL COUNTRY TUBULAR GOODS

■ Pipes produced by SURYA are with tight tolerance on product including roundness, straightness with length up to 12.90 meter (42 feet), besides sourcing reliable high quality steel .

■ Most popular range in Tubing & casing is covered. The range for Tubing is from OD 2 -3/8 to 4-1/2 Inch & for casing it is from OD 4 -1/2 to 16 Inch .



# ACHIEVEMENTS & ACCREDITATIONS

The success quotient of SURYA is unmatched. We thrive hard to cater brilliance at every pedestal. SURYA has achieved many accreditations and certificates from various governing bodies to guarantee the best of quality and next generation technology inculcated in every product. We are certified from the authority to use the Official API monogram which is a mark of sheer trust and reliability. ERW Welded pipes from Surya have bagged many certifications that ensures longevity and quality of the pipes.



# VALUES WE NURTURE

We shall endeavour to maintain leadership through quality products and cost control, explore new avenues in product development, marketing and exports, create a stronger bond with our stakeholders, contribute to social development and constantly strive for excellence in all spheres of our global activities.

## INTEGRITY

We do the right thing For the right reason.

## EXCELLENCE

We strive to deliver the highest quality standards through simple, easy and relevant solutions.

## INSPIRATION

We inspire each other to explore ideas that can make the world a better place.

## CARING

We listen and respect our customers and each other so we can act with insight, understanding and compassion.







Delivering Trust...  
....across the Globe !



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**PRAKASH**  
**SURYA**  
STEEL TUBES & PIPES